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PIANO WORKS BY AZERBAIJANI COMPOSERS OF THE 21ST CENTURY

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ФОРТЕПИАННЫЕ ПРОИЗВЕДЕНИЯ АЗЕРБАЙДЖАНСКИХ КОМПОЗИТОРОВ XXI ВЕКА

Abstract.
This article is dedicated to a comprehensive analysis of the stylistic and technical features of piano works by 21st-century Azerbaijani composers, as well as the synthesis of national musical thought with contemporary compositional techniques. Particular emphasis is placed on the concept of rests and silence, textural transparency, and the central role of overtones in Faraj Garayev's "Postludia" series and "Cancion di cuna". In Azer Dadashov's Piano Concertos No. 1, 2, and 3 for piano and chamber orchestra, the unity of single-movement and three-movement forms with classical structures, alongside national intonations-particularly the song "Qəmərim" as performed by Khan Shushinski-is examined. Innovative methods employed in Sevda Ibrahimova's Piano Concertos No. 4 and No. 5, such as the incorporation of a vocal part into the coda, are analyzed comparatively with contemporary European compositional practice.

Javanshir Guliyev's cycle "Seven Pieces and Interludes in Mugham Modes" is evaluated as a paradigmatic example of the "New Folklore Wave," offering analysis of the embodiment of mugham "dastgāh" modal systems through the piano, the imitation of folk instrument timbres on the grand piano, and the system of complex polyrhythms and changing meters. In Elmir Mirzayev's prelude cycle "Five Styles for Piano", the author's concept regarding the exhaustion of the piano's expressive resources, the extensive interpretative freedom granted to the performer, and elements of instrumental theater are investigated.

In the piano concertos of Ayaz Gambarli, Lala Jafarova, and Jeyhun Allahverdiyev, the integration of national musical intonations with contemporary writing techniques, high performance demands, and the masterful treatment of "ashig" and mugham intonations are highlighted. Aliya Mammadova's "Music for Violin and Piano" is examined through the synthesis of prepared piano timbres with violin expressivity, analyzed within the framework of the "hidden ostinato" concept derived from the mugham "Humayun." Adila Yusifova's piano étude is studied with respect to contemporary performance techniques, including changing meters, complex metro-rhythmic structure, and movement across three staves.

In conclusion, it is determined that 21st-century Azerbaijani composers, while remaining faithful to national traditions in the domain of piano music, have creatively assimilated such contemporary compositional techniques as serialism, aleatorics, sonoristics, pointillism, and prepared piano; have created new forms based on genre synthesis; and have substantially expanded the technical and timbral possibilities of piano performance. The research demonstrates that Azerbaijani piano music not only maintains its relevance for both composers and audiences in the contemporary period but also continues to contribute to world musical culture.

Аннотация.
Статья посвящена всестороннему анализу стилистических и технических особенностей фортепианного творчества азербайджанских композиторов XXI века, а также синтезу национального музыкального мышления с современными композиторскими техниками. Особое внимание уделено концепции паузы и тишины, прозрачности фактуры и центральной роли обертонов в серии «Постлюдии» и сочинении «Cancion di cuna» Фараджа Караева. В Концертах № 1, 2 и 3 для фортепиано с камерным оркестром Азера Дадашова исследовано единство одночастных и трехчастных форм с классической структурой, а также национальных интонаций — в особенности песни «Гямярим» в исполнении Хана Шушинского. Новаторские методы, такие как включение вокальной партии в коду в Фортепианных концертах № 4 и 5 Севды Ибрагимовой, рассмотрены в сравнительном аспекте с современной европейской композиторской практикой.

Цикл Джаваншира Гулиева «Семь пьес и интерлюдий в ладах мугама» оценен как парадигмальный образец «Новой фольклорной волны»; проанализированы воплощение ладовых систем мугамных дастгяхов средствами фортепиано, имитация тембров народных инструментов на рояле, система сложных полиритмов и переменных размеров. В цикле прелюдий Эльмира Мирзаева «Пять стилей для фортепиано» исследованы авторская концепция исчерпанности выразительных возможностей фортепиано, широкая интерпретационная свобода, предоставляемая исполнителю, и элементы инструментального театра.

В фортепианных концертах Аяза Гямберли, Ляля Джафаровой и Джейхуна Аллахвердиева отмечены единство национальных музыкальных интонаций с современной техникой письма, высокие исполнительские требования, профессиональная разработка ашугских и мугамных интонаций. В сочинении Алии Мамедовой «Music for violin and piano» дан анализ синтеза тембров подготовленного фортепиано с выразительностью скрипки в рамках концепции «скрытого остинато», основанной на мугаме «Хумаюн». В фортепианном этюде Адили Юсифовой исследованы современные исполнительские техники, включая переменные размеры, сложное метроритмическое строение и движение по трем нотным строкам.

В заключении установлено, что азербайджанские композиторы XXI века, сохраняя верность национальным традициям в области фортепианной музыки, творчески освоили такие современные композиторские техники, как сериализм, алеаторика, сонористика, пуантилизм, подготовленное фортепиано, создали новые формы на основе жанрового синтеза и значительно расширили технические и тембровые возможности фортепианного исполнительства. Исследование показывает, что азербайджанская фортепианная музыка не только сохраняет свою актуальность как для композиторов, так и для слушателей в современный период, но и продолжает вносить вклад в мировую музыкальную культуру.

Keywords: *contemporary, piano, composer, sonoristics, serialism, prepared grand piano, étude, mugham.*

Ключевые слова: *современный, фортепиано, композитор, сонористика, сериализм, подготовленный рояль, этюд, мугам.*

Introduction. When examining piano styles, artistic movements, and directions in 21st-century Azerbaijani piano music, it is necessary to analyze the musical text of contemporary piano works and the performance techniques employed on the grand piano. In the modern musical process, successive stylistic trends continuously steer composers toward new artistic quests and directions, as well as previously unexplored creative domains. Alongside serialism and neoclassicism, the formation of a new folkloric wave can be observed. Contemporary compositional techniques expand and enrich the possibilities of pianistic art. Consequently, the pressing issues of modern piano performance and the interpretation of piano works are manifested at an increasingly sophisticated level.

Main Text: Beginning in the 1950s, a period of revival in the development of the Azerbaijani compositional school became evident-a process clearly marked by the emergence of a new generation of composers at approximately 20-to-25-year intervals. This evolution, demonstrated in the 1950s through the work of such artistic luminaries as Gara Garayev and Fikrat Amirov, continued in the 1970s with the creative output of renowned composers including Arif Malikov, Khayyam Mirzazade, Agshin Alizade, Faraj Garayev, Firangiz Alizade, Ismail Hajibeyov, Javanshir Guliyev, and Rahila Hasanova. In the 1990s, this continuity was sustained by composers such as Ali Alizade, Elmir Mirzayev, Vasif and Jeyhun Allahverdiyev, Aliya Mammadova, Rufat Khalilov, and Khadija Zeynalova; and in the 2010s, by representatives of the younger generation-among them Firudin Allahverdi, Turkar Gasimzade, Said Gani, Ayaz Gambarli, and others-through their respective works.

In contemporary Azerbaijani piano music, the fundamental principles of national musical thought-alongside stylistic and technical innovations in compositional practice-are synthesized at a qualitatively new level. Elements inherent to folklore, combined with aleatorics, sonoristics, and complex modal-harmonic structures, are employed both within traditional forms and for interpretive purposes. These processes undoubtedly provide the foundation for the stylistic renewal of Azerbaijani piano music. This renewal is manifested primarily in the enrichment of harmonic language, evident both in classical polyphonic forms and in the specific polyphonic techniques of the twentieth century. Furthermore, compositional technique becomes increasingly individualized, while the thematic content of piano works expands significantly in terms of expressive possibilities.

In connection with the broadening palette of musical imagery, the thematic structure of works also undergoes transformation in the contemporary period: the diversity of genres increases, and new lyrical-characteristic miniature forms emerge-such as “sketch,” “fresco,” “transient moments,” and “moods.” Piano music also actively participates in the process of genre interaction, giving rise to hybrid forms such as the “concerto-symphony” and “poem-toccata,” thereby affirming a tendency toward genre synthesis in music.

Faraj Garayev, a distinguished composer of the twenty-first century and a successor to the legacy of Gara Garayev, has created numerous valuable artistic works by employing contemporary compositional techniques-including serial technique and pointillism-in his compositions. [Vysotskaya, Marianna. Moscow, 2012. 582 p.]

In his works for piano, the composer makes use not only of conventional instrumental practices but also of novel performance effects.

Samir Mirzayev writes: “*The principal characteristics of Faraj Garayev’s oeuvre are the transparency and fragility of his textures. This stems largely from the voids, rests, and silences within the texture. One might say that the ‘rest’ constitutes one of the fundamental elements of Faraj Garayev’s music. Sounds emerging from silence or dissolving into silence, as well as overtones, occupy a central place in his creative output. At times, the composer is able to express more through silence than through many tumultuous sounds. Although the concept of silence in music has long existed in twentieth-century art,34 F. Garayev sought to approach this concept with greater detail. What may be termed ‘sounds of silence’ are increasingly evident in his work*” [Mirzayev S., Baku, 2020, p. 39].

The composer's series of Postludia plays a significant role in contemporary piano music. In these works, the piano and clarinet engage in dialogue, with the solo thematic material entrusted to the piano.

Another work by Faraj Garayev is Cancion di cuna, composed in 2001 on commission for a festival to be held in Berlin, Germany. Although Cancion di cuna is a vocal chamber work, the piano plays a substantial role within it. Scored for soprano and chamber ensemble, the piece is cast in three movements, the outer sections characterized predominantly by weak dynamics such as piano (p) and pianissimo (pp). In the middle section, however, a fortissimo (ff) dynamic marks the climactic point-an effective yet brief enrichment. The prevailing emotional tone of the work as a whole is one of melancholy and nostalgia.

In the early twenty-first century, the three concertos composed by Azer Dadashov may be regarded as significant achievements in piano performance. Although Concertos No. 1 and No. 3 for piano and chamber orchestra are written in single-movement form, Concerto No. 2 follows a traditional three-movement structure. In his Piano Concerto No. 1, Dadashov employs a non-traditional approach: it is composed in a single movement, demonstrating a departure from the classical three-movement design. Nevertheless, the structure and form of this unified movement remain highly conventional, within which the intonations of the song "Qəmərim"-as performed by the eminent khananda Khan Shushinski—are skillfully utilized. The melodic intonations of "Qəmərim" appear at the principal junctures of dramatic development, serving as nodal points that unify the movement and function as an overarching leitmotif. This approach reflects not only a sincere devotion to the national musical heritage but also the composer's deliberate pursuit of a harmonious synthesis between classical form and indigenous musical material.

Azer Dadashov's Piano Concerto No. 3 was written in 2009 specifically for the competition "Best Performance of Azer Dadashov's Piano Works." Like his first concerto, Azer Dadashov's Piano Concerto No. 3 is structured in single-movement form and scored for piano and chamber orchestra. This decision confirms the composer's continued creative exploration within the chamber-symphonic genre, as well as his inclination toward concise, tightly woven compositional forms. The single-movement structure lends the work dramatic unity and dynamic character, while the interplay between piano and chamber orchestra enables delicate, detailed textures and a profound ensemble dialogue.

The concerto for piano and orchestra by the distinguished composer Sevda Ibrahimova may be regarded as an achievement of our contemporary era. Sevda Ibrahimova is the author of five piano concertos and one concertino; although these works originate from the same compositional pen, each is distinguished by its unique stylistic features, instrumentation, and formal structure. The innovative methods employed by the composer in her Piano Concertos No. 4 and No. 5, both composed in the twenty-first century, are examined and analyzed in comparison with the works of contemporary European composers. Particularly noteworthy is the innovative step taken by the composer in the coda of Piano Concerto No. 4, where she introduced a vocal part.

Javanshir Guliyev's piano cycle "Seven Pieces and Interludes in Mugham Modes" stands as a vivid example of the "New Folklore Wave," synthesizing, on the one hand, the traditional structures of mugham and, on the other, the aesthetics of contemporary musical thought into a unified artistic whole. Dedicated to the pianist Teymur Shamsiyev, this work presents mugham traditions within modern piano expression in a novel and inventive form. The structural framework of the cycle employs the modal systems of seven principal mugham "dastgahs", each of which is complemented by its own interlude. At the outset of the composition, the composer provides specific instructions regarding the tuning of the grand piano and timbral adjustments. This approach is aimed at achieving timbral imitation of traditional Azerbaijani folk instruments-such as the "naghara" and "ud"-through the grand piano, thereby emphasizing the universal expressive capacity and timbral richness of the keyboard-percussion instrument.

Moreover, this cycle demands a high level of technical and artistic proficiency from the performer: the embodiment of the mugham genre in a transcription for piano is realized through fine finger technique, dynamic alternations of modal-tonal systems, rhythmic precision, and complex polyrhythmic figurations. This approach facilitates the artistic transformation of traditional musical material within an intuitive freedom, opening new interpretative horizons for the performer.

In sum, Javanshir Guliyev's work represents a significant stage in the development of contemporary Azerbaijani piano music, synthesizing within its expression the artistic principles of the Gara Garayev school and its successors.

In 2006, Elmir Mirzayev composed a cycle of preludes commissioned by the pianist Gulshan Annagiyeva, titled "Five Styles for Piano". The central ideological premise underlying the composer's conception of the five styles is articulated as follows: as the author himself states, at the core of this concept lies the notion that the piano, as an instrument, has been exhaustively explored by the twenty-first century, its technical and artistic possibilities already depleted-and that, consequently, nothing entirely new can be rediscovered for it. Mirzayev cites his own "Five Styles for Piano" as a testament to this thesis.

The work reflects a significant process occurring within contemporary Azerbaijani piano music: a renewed theoretical focus on the interaction between European and non-European cultures, as well as between folk and professional musical traditions. In contemporary compositional thought, a departure from unilateral "Eurocentrism" is observed, accompanied by a reconstructive approach to national musical forms and the principles of national musical thought. The considerable interpretative freedom granted to the performer within the musical text, together with contemporary notation techniques, foregrounds, to a certain extent, elements of instrumental theater. Within this framework, each performance of new works grants the composer and performer a status of co-authorship; as a result, the work acquires interpretive multiplicity through its capacity to generate irreplicable readings.

The piano oeuvre of Ayaz Gambarli, a protégé of the distinguished Azerbaijani composer Arif Malikov, may likewise be regarded as an achievement of the twenty-first century. His creative output extensively features programmatic works, in which human emotions, fleeting moments of time, and the impressions of events are rendered through distinctive artistic means of expression. Although Ayaz Gambarli adeptly employs contemporary compositional techniques in his works for piano, his Piano Concerto evinces a certain departure from this style. This is explained by the fact that, during the period of its composition, explorations into contemporary writing techniques had not yet broadly proliferated. Nevertheless, the stylistic characteristics of the twenty-first century remain appreciably perceptible within this concerto.

The works for piano by other protégés of Professor Arif Malikov-Lala Jafarova and Jeyhun Allahverdiyev-likewise constitute a contribution to twenty-first-century Azerbaijani culture. Both composers have turned to small- and large-scale works for piano in their creative practice, embodying within these compositions the spirit of the twenty-first century. In the concertos for piano and orchestra by Lala Jafarova and Jeyhun Allahverdiyev, national musical intonations are skillfully integrated with contemporary compositional techniques. While these concertos exhibit structural similarities, each also manifests distinct artistic characteristics. Upon examining both works, one of the most immediately striking features is the considerable technical demands they place on the performer. Jeyhun Allahverdiyev's Piano Concerto incorporates the intonations of “ashig” music more extensively, whereas Lala Jafarova masterfully synthesizes mugham intonations with the classical genre.

In these concertos, both composers have renewed their musical styles through an organic synthesis of national and Western musical traditions. Jeyhun Allahverdiyev adopted a somewhat different approach to his piano concerto, omitting the cadenza section. The composer's piano concerto is a work that is both technically rich and demands a high level of performance proficiency. The continuous succession of intricate passagework presents considerable technical challenges for the soloist. These characteristics may likewise be attributed to Lala Jafarova's piano concerto. The piano concertos of both composers play a distinctive role in the development of the twenty-first-century Azerbaijani piano school, as each work constitutes a valuable contribution to the repertoire of performing pianists.

In the piano pieces composed in 2008 by Aliya Mammadova-a representative of the contemporary compositional school-we observe a synthesis of modern style with traditional methods. Her 2019 work “Music for Violin and Piano” (for violin and prepared piano) synthesizes the timbral possibilities of the prepared grand piano with the expressivity of the violin, representing a new form of instrumental dialogue within contemporary Azerbaijani chamber music. The work combines national modal-tonal elements with unconventional harmonic constructions and dynamic contrasts, thereby revealing profound layers of emotional and intellectual content. This composition is exemplary in its reflection of the subtle nuances of contemporary compositional language: it is both technically demanding and affords performers considerable freedom in artistic interpretation. Aliya Mammadova's works have been successfully performed at festivals and concerts in various countries and have been warmly received by audiences. The composer notes: "*In general, for me, a work is an entity born from the confrontation of intonational relationships. You follow the intonations and, through the representation of various instruments-by means of their capabilities, texture, dynamics, conception of form, and so forth-you construct their relationships. I must say that it is precisely 'Humayun' that is able to create these connections, sometimes overtly, sometimes covertly. Everything 'comes toward it' and 'departs from it.' In general, the concept of 'hidden ostinato' exists for me. In every work. An ostinato that functions as a distinctive modal-structural foundation*" [Mammadova A., 2001].

Adila Yusifova, a representative of the contemporary Azerbaijani compositional school, has produced a body of piano works that merit attention from the perspectives of both performance practice and compositional craft. In her creative output, Yusifova successfully synthesizes folk music traditions-particularly the mellifluous melodic lines and rhythmic richness of mugham art-with contemporary pianistic idiom. Indeed, the influence of mughams, the poetic motifs of folk songs, and the breath of dance rhythms may be discerned throughout nearly all of her compositions. Rich in substance, these works are successfully performed both in educational settings and concert programs.

Adila Yusifova's étude for piano is cast in a simple ternary form: the first section is rendered at an Allegro tempo, the second at Moderato. The third section commences abruptly. In terms of tempo, no substantial contrast exists between the sections; the third section is constructed upon the rhythmic passagework of measures 37–46. A distinctive feature of the étude lies in its rhythmic transformations, wherein simple, compound, and irregular meters alternate: 4/4, 6/4, 3/4, 5/4, 2/4, and 6/16.

The étude reflects complex performance techniques: changing meters, intricate metro-rhythmic patterns, and movement across three staves.

It is my view that this étude-which embodies contemporary performance practices-is particularly relevant to our present era. Works such as this not only develop students' technical proficiency but also heighten their interest in our national music and modal systems. Through this étude, composed in a contemporary idiom, students will encounter for the first time a score written on three staves; this work will assist them in clearly apprehending complex texture, as well as melodic and rhythmic lines.

Conclusion. In conclusion, by adapting to the most current and innovative tendencies in contemporary music, the Azerbaijani compositional school has succeeded in preserving its national distinctiveness and its connection to traditional roots. Piano works-regarded as one of the principal genres of academic music-have not remained outside the historical evolutionary process of the national compositional school but have developed firmly within it. Rich in national characteristics and stylistic features, piano works continue to evolve actively today, captivating audiences through innovative methods. Moreover, it is important to note that, as in the twentieth century, there remains a significant demand for piano works in the contemporary period among both composers and listeners.

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MEDICAL SCIENCES

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СИНДРОМ ПОЛІКІСТОЗНИХ ЯЄЧНИКІВ ТА АКНЕ: СУЧАСНИЙ ПОГЛЯД НА ПАТОГЕНЕЗ, ДІАГНОСТИКУ ТА ЛІКУВАННЯ

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POLYCYSTIC OVARY SYNDROME AND ACNE: A CURRENT OVERVIEW OF PATHOGENESIS, DIAGNOSIS, AND TREATMENT

Анотація.

Синдром полікістозних яєчників (СПКЯ) є одним із найпоширеніших ендокринних розладів у жінок репродуктивного віку та часто супроводжується дерматологічними проявами, зокрема акне. У статті висвітлено сучасні уявлення про патогенез СПКЯ-асоційованого акне, акцентовано увагу на ролі гіперандрогенії, інсулінорезистентності та запальних механізмів. Розглянуто діагностичні критерії, особливості міждисциплінарного підходу та сучасні стратегії лікування з позиції гінеколога.

Abstract.

Polycystic ovary syndrome (PCOS) is one of the most common endocrine disorders in women of reproductive age and is often accompanied by dermatological manifestations, particularly acne. This article reviews current understanding of the pathogenesis of PCOS-associated acne, emphasizing the role of hyperandrogenism, insulin resistance, and inflammatory mechanisms. It discusses diagnostic criteria, the characteristics of an interdisciplinary approach, and current treatment strategies from a gynecologist's perspective.

Ключові слова: *СПКЯ, акне, гіперандрогенія, інсулінорезистентність, гінекологія, гормональна терапія.*

Keywords: *PCOS, acne, hyperandrogenism, insulin resistance, gynecology, hormone therapy.*

Матеріали та методи. Проведено огляд наукової літератури, що базується на публікаціях у базі даних PubMed за останні 10 років, а також на джерелах видавництва MDPI, сучасних підручниках з гінекології, клінічної ендокринології та міжнародних і національних клінічних рекомендаціях щодо діагностики та лікування синдрому полікістозних яєчників.

Materials and methods. A review of the scientific literature was conducted based on publications in the PubMed database over the past 10 years, as well as on sources from MDPI, current textbooks on gynecology and clinical endocrinology, and international and national clinical guidelines for the diagnosis and treatment of polycystic ovary syndrome.

Мета роботи: полягає у систематизації та аналізі сучасних наукових даних щодо етіології, патогенезу, клінічних проявів та сучасних підходів до лікування синдрому полікістозних яєчників та акне, з особливим акцентом на гінекологічні аспекти ранньої діагностики, оцінку ефективності гормональної та метаболічної терапії, а також впровадження міждисциплінарного підходу для досягнення клінічного контролю симптомів і покращення якості життя пацієнток.

The aim of this study is to systematize and analyze current scientific data on the etiology, pathogenesis, clinical manifestations, and modern treatment approaches for polycystic ovary syndrome and acne, with a particular focus on the gynecological aspects of early diagnosis, the evaluation of the effectiveness of hormonal and metabolic therapy, as well as the implementation of an interdisciplinary approach to achieve clinical control of symptoms and improve patients' quality of life.

Актуальність. Синдром полікістозних яєчників (СПКЯ) діагностується приблизно у 8–13% жінок репродуктивного віку та є провідною причиною гіперандрогенії. Акне, як клінічний прояв надлишку андрогенів, спостерігається у значної частини пацієнток із СПКЯ і нерідко є першою причиною звернення до лікаря. У сучасних умовах зростає значення ранньої діагностики СПКЯ саме через дерматологічні симптоми, що потребує активної участі гінеколога у веденні таких пацієнток.

Синдром полікістозних яєчників є мультифакторним ендокринним розладом, який характеризується хронічною ановуляцією, гіперандрогенією та полікістозною морфологією яєчників [1]. Центральною ланкою патогенезу є дисрегуляція гіпоталамо-гіпофізарно-яєчникової осі, що призводить до підвищеної секреції лютеїнізуючого гормону та надлишкової продукції андрогенів у тека-клітинах яєчників [4]. Гіперандрогенія відіграє ключову роль у розвитку акне при СПКЯ, оскільки андрогени стимулюють гіперсекрецію себуму та проліферацію кератиноцитів у волосяних фолікулах [5]. Це створює сприятливі умови для колонізації Cutibacterium acnes та розвитку запального процесу [6]. Сучасні дослідження також підкреслюють значення інсулінорезистентності як одного з провідних патогенетичних механізмів СПКЯ [7]. Гіперінсулінемія посилює синтез андрогенів у яєчниках та знижує рівень глобуліну, що зв'язує статеві гормони (SHBG), підвищуючи біодоступність тестостерону [8]. Це, у свою чергу, сприяє посиленню дерматологічних проявів, включаючи акне [9]. Окрім гормональних факторів, важливу роль відіграють хронічне низькорівневе запалення та оксидативний стрес, які часто спостерігаються у пацієнток із СПКЯ [10]. Запальні цитокіни можуть безпосередньо впливати на функцію сальних залоз і посилювати перебіг акне [11].

Діагностика СПКЯ базується на Роттердамських критеріях, які включають наявність двох із трьох ознак: оліго- або ановуляції, клінічної чи біохімічної гіперандрогенії та полікістозної морфології яєчників за даними ультразвукового дослідження [1]. У контексті акне важливо проводити диференційну діагностику з іншими причинами гіперандрогенії, такими як вроджена гіперплазія наднирників або андрогенпродукуючі пухлини [12].

З позиції гінеколога лікування СПКЯ-асоційованого акне повинно бути комплексним і спрямованим на усунення основної причини — гіперандрогенії [13]. Комбіновані оральні контрацептиви (КОК) є терапією першої лінії, оскільки вони знижують рівень андрогенів та підвищують концентрацію SHBG [14]. Антиандрогенні препарати, такі як спіронолактон, можуть застосовуватися як додаткова терапія у випадках резистентного акне [15]. Важливу роль відіграє корекція інсулінорезистентності, зокрема за допомогою метформіну, що сприяє зниженню рівня інсуліну та андрогенів [16].

Окрему увагу слід приділяти модифікації способу життя, включаючи нормалізацію маси тіла, раціональне харчування та фізичну активність, що доведено покращує гормональний профіль та зменшує прояви акне [17].

Міждисциплінарний підхід із залученням дерматолога дозволяє досягти оптимальних результатів лікування, проте саме гінеколог відіграє ключову роль у контролі ендокринних порушень [18].

Висновки. СПКЯ є складним ендокринним розладом, що тісно пов'язаний із розвитком акне через механізми гіперандрогенії та інсулінорезистентності. Своєчасна діагностика та комплексне лікування з акцентом на гормональну корекцію дозволяють значно покращити клінічний стан пацієнток. Роль гінеколога є визначальною у веденні таких хворих, оскільки саме він забезпечує патогенетично обґрунтований підхід до терапії.

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RHEUMATOID ARTHRITIS: ETIOLOGY, CLINICAL MANIFESTATIONS, AND CURRENT TREATMENT APPROACHES (LITERATURE REVIEW)

Abstract.

Rheumatoid arthritis is a chronic systemic autoimmune disease of the connective tissue characterized by predominant joint involvement in the form of symmetrical erosive polyarthritis, with the potential for the development of extra-articular manifestations and systemic complications. This article summarizes current understanding of the etiology and pathogenesis of rheumatoid arthritis, including the role of genetic factors, autoimmune mechanisms, protein citrullination, pro-inflammatory cytokines, and the influence of environmental factors. Special attention is given to the clinical manifestations of the disease: inflammatory pain syndrome, morning stiffness, symmetrical involvement of the small joints of the hands and feet, progression of functional impairments, and the development of typical deformities. Modern approaches to the treatment of rheumatoid arthritis are also discussed, including the use of disease-modifying antirheumatic drugs, glucocorticoids as temporary maintenance therapy, biologic agents, Janus kinase inhibitors, and treat-to-target strategies. The importance of early diagnosis, timely initiation of disease-modifying therapy, and regular monitoring of disease activity is emphasized to achieve remission, slow structural joint damage, and improve patients' quality of life.

Keywords: *rheumatoid arthritis, autoimmune disease, citrullination, polyarthritis, disease-modifying antirheumatic drugs, methotrexate, biologic therapy, treat-to-target.*

Materials and methods: A literature review was conducted based on articles published in PubMed databases over the past 10 years, MDPI, clinical immunology and gastroenterology textbooks, international and national clinical guidelines.

The purpose of the work is to systematize and analyze current scientific data on the etiology, pathogenesis, clinical manifestations, and modern therapeutic approaches to rheumatoid arthritis, with a particular focus on early diagnosis, the effectiveness of basic and targeted therapies, and the implementation of the treat-to-target strategy to achieve sustained remission and improve patients' quality of life.

Topicality. Rheumatoid arthritis (RA) is a chronic systemic autoimmune disease of the connective tissue characterized by symmetrical polyarthritis, synovial proliferation, pannus formation, cartilage and bone degradation, as well as the development of functional limitations and systemic complications [1]. RA is a multifactorial disease in which complex interactions between genetic, immunological, and environmental factors play a key role [2].

Genetic factors are decisive in determining susceptibility to RA. The most studied group of genes is HLA class II, particularly HLA-DRB1, which contains the so-called "shared epitope." The presence of this epitope correlates with a significantly increased risk of developing the seropositive form of RA and the severity of the clinical course [3]. In addition to HLA, a number of non-HLA genes, such as STAT4, PTPN22, TRAF1/C5, and CCR6, are also associated with increased immune activity, impaired T- and B-lymphocyte tolerance, and thus with the multigenetic nature of the disease [4].

Autoimmune mechanisms are a central pathogenic component of RA. One of the key events is the post-translational modification of proteins—citrullination—which forms new epitopes that are recognized by the immune system as foreign. In response, antibodies to cyclic citrullinated peptides (ACPA) and rheumatoid factor (RF) are formed, initiating local and systemic inflammation [5]. The activation of T cells, B cells, and macrophages in the synovium is accompanied by the secretion of pro-inflammatory cytokines, such as TNF-α, IL-1β, and IL-6, which causes the proliferation of synovial fibroblasts, the formation of pannus, and the destruction of articular cartilage and subchondral bone [6].

Environmental factors significantly modulate immune responses in genetically susceptible individuals. Smoking is the most studied risk factor and is associated with the development of seropositive RA, particularly in carriers of the HLA-DRB1 "shared epitope" [7]. It has been demonstrated that smoking induces protein citrullination in the respiratory tract, contributing to the formation of ACPA [7]. Oral pathologies, particularly periodontitis, and colonization by Porphyromonas gingivalis can induce similar citrullination mechanisms, which also stimulate an autoimmune response [8]. Gut dysbiosis, accompanied by changes in the composition of the microbiota, interacts with immune cells in the mucosa and may trigger the development of systemic inflammation [9]. Hormonal and biological factors also play a significant role. RA is more common in women, indicating a modulatory role of sex hormones, particularly estrogens, in the regulation of the immune response and immune tolerance [10]. Obesity and metabolic disorders may exacerbate pro-inflammatory processes through the secretion of adipokines and stimulation of the cytokine cascade [11]. Infectious agents are considered potential triggers of RA. Viruses, such as the Epstein–Barr virus, and bacteria, including Mycoplasma spp., can trigger mechanisms of molecular mimicry and nonspecific activation of the immune system, which initiates an autoimmune process in genetically susceptible individuals [12].

At the molecular level, key factors include synovial fibroblast dysfunction and dendritic cell activation, leading to a persistent inflammatory environment and the production of matrix metalloproteinases, collagenases, and other enzymes that degrade cartilage and bone. B-cell activation, ACPA production, and antigen-antibody complexes stimulate an additional local inflammatory cascade and the development of systemic manifestations, including cardiovascular complications [13].

The clinical manifestations of rheumatoid arthritis are characterized by a combination of local (joint) and systemic symptoms that develop gradually and may vary depending on disease activity [14]. Initial symptoms are often nonspecific and include general weakness, rapid fatigue, loss of appetite, and periodic elevation of body temperature to subfebrile levels [14,15]. The leading clinical manifestation is inflammatory joint pain, which worsens at rest, especially at night and in the morning, and partially subsides with physical activity [14].

Joint involvement is typically symmetrical, predominantly affecting the small joints of the hands and feet, particularly the metacarpophalangeal and proximal interphalangeal joints [15]. A characteristic feature is prolonged morning stiffness lasting more than 60 minutes, which also occurs after periods of prolonged immobility [15]. Affected joints become swollen and tender to the touch; local temperature elevation and, occasionally, skin erythema over them are noted [14,15]. As the disease progresses, joint mobility becomes restricted, which is associated with chronic inflammation of the synovial membrane and structural changes [14]. In cases of long-term disease, characteristic joint deformities may develop, including ulnar deviation of the fingers, “swan neck” and “buttonhole” deformities, accompanied by permanent loss of function [14].

Extra-articular manifestations include rheumatoid nodules—firm subcutaneous lesions that are most commonly found in areas subject to mechanical pressure [14]. In addition, the disease may be accompanied by systemic manifestations, such as chronic fatigue, weight loss, and general malaise [15]. The course of symptoms is typically wave-like, with alternating periods of exacerbation and partial remission of clinical manifestations [14].

Staging and selection of basic therapy. The modern therapeutic paradigm is based on the immediate prescription of synthetic disease-modifying antirheumatic drugs (csDMARDs) after diagnosis confirmation [1]. Methotrexate (MT) remains the “gold standard” of first-line therapy; however, domestic specialists recommend giving preference to parenteral forms of MT administration to ensure stable bioavailability and reduce toxic effects on the gastrointestinal tract [16]. In the presence of absolute contraindications to methotrexate (in particular, in cases of chronic liver disease or a significant reduction in glomerular filtration rate), leflunomide or sulfasalazine become the drugs of choice [17].

Glucocorticoid support and “bridge therapy.” The use of low-dose glucocorticoids (GCs) is considered exclusively as a temporary measure to rapidly suppress inflammation until the full effect of the primary disease-modifying antirheumatic drugs (DMARDs) develops [18]. According to the updated EULAR 2022–2024 guidelines, the duration of such therapy should be minimal (usually no more than 3 months), followed by mandatory and gradual dose tapering [19]. This is due to the high risk of developing systemic complications, including osteoporosis and cardiovascular disease [20].

Transition to targeted therapy (bDMARDs and tsDMARDs). If the treatment goal (remission or low disease activity as measured by DAS28/SDAI) is not achieved within 3–6 months with methotrexate, the algorithm recommends adding biologics or Janus kinase inhibitors [1]. In patients with aggressive disease progression and early joint erosion, preference is given to targeted synthetic molecules (JAK inhibitors), which demonstrate a rapid response and high efficacy in restoring functional capacity [21]. However, a prerequisite for prescribing such therapy in Ukraine remains prior screening for latent tuberculosis infection and viral hepatitis [16].

“Treat-to-Target” strategy and dose tapering. A key element of success is regular monitoring of disease activity (“treat-to-target”), which involves dose adjustments every 1–3 months [22]. If sustained clinical remission lasting more than one year is achieved, a cautious reduction in the dose of targeted medications (tapering) is possible; however, complete discontinuation of treatment is generally not recommended due to the high likelihood of relapse and loss of control over radiographic progression [1].

Conclusion: Rheumatoid arthritis is a complex multifactorial autoimmune disease characterized by chronic progressive joint inflammation and systemic involvement. Advances in understanding its immunopathogenesis, particularly the role of genetic predisposition, citrullination processes, and proinflammatory cytokines, have significantly improved diagnostic and therapeutic strategies. Early diagnosis and timely initiation of basic therapy, especially methotrexate, remain crucial for preventing irreversible joint damage. The implementation of the treat-to-target approach, along with the use of biological agents and Janus kinase inhibitors, allows for effective control of disease activity and achievement of sustained remission in a significant proportion of patients. Continuous monitoring and individualized treatment strategies are essential to optimize outcomes and improve the quality of life of patients with rheumatoid arthritis.

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DIFFERENTIAL APPROACH ON GASTROINTESTINAL BLEEDING IN CHILDREN AND EMERGENCY CARE. (REVIEW OF LITERATURE)

Abstract
The article shows general information regarding diagnostic and treatment approach to both upper and lower gastrointestinal bleeding (GIB) in paediatric medical care.

Key words: *gastrointestinal bleeding, endoscopy, inflammatory bowel diseases, emergency care, paediatric surgery.*

Introduction

The estimated prevalence of GIB in children is 6,4% with spontaneous resolution in 80% of cases [1]. However, in those cases when the condition gradually progresses, rapid medical assessment is required. The amount of intervention is determined based on the age of the patient, severity of the process, blood loss, comorbidity and the site of the bleeder. The emergency help itself could be divided in two subcategories: common actions that are aimed to prevent shock, sustain haemodynamic, support the free airway passage, monitor the vitals, etc; specified interventions that target the bleeding itself and the underlying cause. Thus, since both upper and lower GIB have a list of pathologies under them, it’s important for clinician to know both the general principles of the emergency help and specified skills of resolving the exact medical issue.

General approach

Every patient that comes into emergency department, general practitioner’s cabinet or any other medical facility should have their status estimated. Whether it’s an emergency or a mild situation leads to a different amount of following medical care. If the situation is allowing, the paediatrician is ought to take a comprehensive medical history regarding the symptoms, history of present illness, past medical history, medications and allergies and any other aspect of anamnesis that may concern them. If the evaluation shows significant bleedings the initial approach usually consists of oxygen and airway support, establishing venous line, hemodynamic stabilization while also ordering blood, stool and other analyses depending on the state of the child [2, 3].

Upper GIB

Upper GIB is defined is a haemorrhage that derives from any gastrointestinal tract organ that is situated proximally to Treitz ligament [4]. The authors [5] have made a comprehensive analysis on the causations of upper GIB. They have divided the common causes of upper GIB into two groups: variceal and non-variceal. According to them and their systematised review on literature sources, the main causes of upper GIB in North America and Europe are: prolapse gastropathy syndrome (12,7%), gastric erosions and ulcers (10,8%), erosive esophagitis (9,5%) and duodenal erosions/ulcers (8,2%), whereas less common are oesophageal varices (6,3%) and Mallory-Weiss tear (3,8%). However, these numbers vary depending on the selected age group and exact geographical region.

Upper GIB can present with haematemesis, melaena, signs of anaemisation, chest and/or abdominal pain, shock, cardiovascular or/and respiratory distress. Complete blood count may show signs of recent haemorrhage [2, 6]. Coagulation panel may indicate underlying liver diseases, which lead to cirrhosis and variceal bleeding, or hereditary coagulopathy. Metabolic panel may further confirm liver problems or indicate other organ’s role as the causation agent, e.g. elevated alpha-amylase pointing to a destructive pancreatitis. If the bleeding in not so severe and the case of chronic GIB is considered, occult stool blood testing could be used to further evaluate the diagnosis. If the infectious agent is suspected, an express test or a sample growth could be used to both diagnose and discover the antibiotic resistance [6].

In a lot of cases that require immediate intervention, emergency upper gastrointestinal endoscopy could be performed to both confirm the suspected diagnosis and take actions regarding the bleeder site [3]. For example, the authors [7] had used different approaches to endoscopically stop non-variceal upper GIB ranging from haemoclips to hypersaline and epinephrine injections combined with coagulation therapy. There is a lack of paediatric guidelines for the endoscopic approach to variceal bleeding, however European Society of Gastrointestinal Endoscopy recommends endoscopic band ligation both for the treatment and prophylaxis of the haemorrhage (in patients that have a beta-blockers therapy contraindication) [8]. If the bleeding could not be stopped using conservative and endoscopic approach, urgent surgical intervention is indicated.

Lower GIB

The aetiology list of lower GIB seems to be even longer than that of upper one. The causation agents vary in different age groups from inborn defects or their complications in neonates to autoimmune, oncological and infectious diseases in more adult children [1]. The statistics also vary depending on the region, e.g in the study [9] conducted in Kashmir the main causations of the bleeding were: polyps (33,5%), anal fissure (15,1%), lymphonodular hyperplasia (12,2%), Trichuris dysentery syndrome (9,7%) and cow milk protein allergy (8,7%).

Similar to the upper GIB, lower one can present with the signs of anaemisation, chest and/or abdominal pain, shock, cardiovascular or/and respiratory distress, however the stool changes are presented as a haematochezia and are usually accompanied with diarrhoea [1, 6]. The same goes to the paraclinical analyses, however certain nosologies, such as a group of inflammatory bowel diseases have a stool marker called fecal calprotectin, which can narrow down the differentials list [6].

The endoscopical approach remains the main method of diagnosis verification. Either capsule or colonoscopy can be chosen to observe the intestines, however since the first one is slower and less affordable, while the latter is much faster, colonoscopy is more preferable in the emergency situations [10]. It also allows to resolve the bleeding if the site is visible and can be treated via this method. Otherwise, the emergency surgery is in place [3, 10].

Conclusions

Both upper and lower GIB can present either as mild outpatient or serious emergency case. The list of nosologies, which could lead to the GIB is very wide and requires multidiscipline approach in order to determine exact cause. Each patient should be treated both etiologically and pathologically depending on which link of pathogenesis is more threatening.

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PREMENSTRUAL SYNDROME: FROM MOLECULAR MECHANISMS TO PERSONALIZED THERAPY STRATEGIES

Abstract.
Premenstrual syndrome (PMS) is a clinical set of symptoms characterized by physical, cognitive, and psychoemotional disturbances that occur during the luteal phase of the menstrual cycle. According to official scientific data, PMS is not just an intermediate discomfort, but a key factor that determines the quality of women's health and directly affects personal relationships, work capacity and success [1]. Epidemiological indicators indicate that up to 80% of women experience a worsening of their own condition before menstruation, the so-called premenstrual symptoms (swelling, thickening and tenderness of the mammary glands, headache, increased appetite, worsening mood and increased irritability, etc.). Premenstrual dysphoric disorder (PMDD) is also distinguished - it is the most severe form of PMS, which affects 3–8% of women and is comparable to severe clinical depression in terms of desocialization [2].

Key words: *premenstrual syndrome, premenstrual dysphoric disorder, progesterone, serotonin, stress, lifestyle modification, phytotherapy, hormone therapy, pharmacotherapy.*

Results

The traditional view of PMS as "progesterone deficiency" is recognized as outdated [3]. Modern evidence-based medicine identifies three key pathogenetic links:

1. Hypothesis of neurosteroid vulnerability (GABA-ergic link). The key mediator is allopregnanolone, which is formed as a result of the breakdown of progesterone. It acts as a potent positive allosteric modulator of GABA(A) receptors. Normally, it provides physiological sedation and anxiolytic (anti-anxiety) effect. Women with PMS have an altered configuration of GABA receptor subunits. Instead of calming, fluctuations in allopregnanolone cause paradoxical irritability. A sharp decrease in the concentration of allopregnanolone 48-72 hours before menstruation provokes a state identical to the withdrawal syndrome, which causes the peak of symptoms at the end of the cycle.

2. Central serotonergic dysfunction. Serotonin is the main mediator that regulates mood, sleep and pain sensitivity. Estrogens modulate the activity of tryptophan hydroxylase, the key enzyme of serotonin synthesis. A cyclic drop in the level of estradiol leads to a transient serotonin deficiency, which causes the following consequences: a decrease in the threshold of pain sensitivity (myalgia, mastodynia), disturbances in thermoregulation and sleep, eating behavior (serotonin deficiency stimulates the hunger center, resulting in a compensatory need for "fast" carbohydrates (chocolate, sweets), since the insulin surge facilitates the penetration of tryptophan through the blood-encephalic barrier).

3. Stress desynchronization. PMS is often the result of a violation of adaptation mechanisms. Psychoemotional stress causes:

- desynchronosis: chronic psychoemotional stress disrupts the circadian and circachoral rhythms of GnRH release (gonadotropin-releasing hormone). This causes chaotic stimulation of the pituitary gland.
- neuroendocrine link: the phenomenon of latent hyperprolactinemia occurs. Even a minimal increase in prolactin (within the upper limit of normal) blocks dopamine receptors and stimulates sodium retention.
- water-electrolyte imbalance: activation of the renin-angiotensin-aldosterone system (RAAS) leads to an increase in capillary permeability. This causes the fluid to move into the interstitial space (swelling of the intestinal wall, facial tissues, and limbs), which is the substrate for the swollen form of PMS.

Different forms of PMS are distinguished, which further helps to orientate in treatment and choose a key symptom that can be influenced [4].

Neuropsychic form (dysfunction of limbic systems). This form is the most common and is associated with disruption of serotonin and GABA metabolism in brain structures responsible for emotions. The leading symptom is affective lability — a sudden change in mood from deep apathy and tearfulness (serotonin deficiency) to unmotivated aggression and irritability (GABA-ergic failure). Additional manifestations are impaired cognitive functions (decreased concentration of attention, forgetfulness), sleep disorders (insomnia at night and hypersomnia during the day), changes in libido. With this form, a woman's brain becomes "hypersensitive" to stressors that would be perceived neutrally in other phases of the cycle.

Swollen form (RAAS activation and hyperprolactinemia). The basis is a violation of osmoregulation and retention of sodium salts in the intercellular space. A feeling of "distension" is typical. The most specific symptom is cyclic mastodynia (enlargement and tenderness of the mammary glands), which is associated with swelling of their stroma and a latent increase in prolactin. Somatic manifestations - leg stiffness (difficult to put on usual shoes), swelling of the eyelids in the morning. Patients often note an increase in body weight of 2–4 kg, which disappears with the onset of menstruation. Abdominal syndrome - flatulence and bloating do not occur due to gases, but due to swelling of the intestinal walls, which inhibits its peristalsis.

Cephalic form (vascular dystonia and neurochemical inflammation). This form often mimics neurological diseases, but is clearly linked to the hormonal decline before menstruation. Migraine-like headache (often unilateral) dominates, accompanied by nausea and vomiting, which does not bring relief. Vegetative accompaniment - characteristic sensory hypersensitivity (hyperesthesia) - the patient is irritated by bright light (photophobia), quiet sounds and ordinary household smells. Cardiac component - possible cardialgia (pain in the area of the heart) and paresthesia (sensation of "tingles crawling" in the hands), which is associated with the lability of the tone of peripheral vessels.

Crisis form (sympathoadrenal hyperactivity). The most aggressive form, which indicates a deep exhaustion of the adaptive mechanisms of the autonomic nervous system. Runs by type of panic attacks. The attack begins suddenly, often in the evening or at night: a sharp increase in blood pressure, tachycardia, a feeling of tightness in the chest and chills. The psychological component is necessarily an intense "visceral" fear (fear of death or loss of consciousness). The attack usually ends with profuse urination (polyuria) with light-colored urine. It is important not to confuse these crises with pheochromocytoma or hypertension. The key to the diagnosis is the complete absence of crises in the first phase of the menstrual cycle.

Complex management and therapy

Stage 1: Lifestyle modification A diet high in complex carbohydrates (whole grains, vegetables) is recommended. This stimulates an insulin response, which promotes the transport of tryptophan into the brain for serotonin synthesis. Limiting sodium (table salt) to 2 g per day is critical for patients with edema because it reduces RAAS activity [5, 6]. Yoga and aerobic exercise lower cortisol levels.

Stage 2: Phytotherapy. For patients who have contraindications to hormones or do not want to take them, the basis is Vitex agnus-castus extract. The effectiveness of the specific extract Ze 440 at a dose of 20 mg/day has been confirmed. The drug acts as an agonist of dopamine receptors (D2-receptors) of lactotrophic pituitary cells. This leads to suppression of excessive secretion of prolactin. As a result, cyclical mastodynia (chest pain) is eliminated and the psycho-emotional background is stabilized without interfering with the menstrual cycle. A high safety profile allows it to be recommended as initial therapy [7].

Stage 3: Hormonal and psychopharmacotherapy. In case of inefficiency of the first stages or in case of a severe form (PMDD), a combination of hormonal and neurotropic correction is used.

- Combined oral contraceptives (COCs) with drospirenone: Drospirenone is a unique progestogen that is structurally similar to spironolactone. It has a pronounced antimineralocorticoid effect, which prevents sodium and water retention. A 24/4 regimen is recommended because the short hormone-free interval prevents "withdrawal syndrome" and relapse of symptoms [8].

- Selective serotonin reuptake inhibitors (SSRIs): They directly correct serotonin deficiency in the structures of the limbic system. In contrast to the treatment of clinical depression, an intermittent (luteal) regimen is used for PMS. The drug is prescribed only from the 14th day of the cycle to the start of menstruation. This is due to the fact that the neurotransmitter response in PMS occurs much faster (within hours or days) than in classic mental disorders [9].

Conclusions. Management of PMS requires a holistic approach from the doctor. It is necessary to take into account not only the gynecological status, but also the psycho-emotional profile of the woman. The use of modern herbal preparations (such as Ze 440) and competent lifestyle modification are the foundation that allows avoiding polypharmacy and improving the long-term prognosis of a woman's health.

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MODERN METHODS OF TREATMENT OF LEIOMYOMA OF THE UTERUS

Abstract.
Uterine leiomyoma is one of the most common benign tumors of the female reproductive system. This article discusses the approaches of modern methods of treating uterine leiomyoma, starting from conservative drug therapy to minimally invasive procedures and organ-preserving surgical interventions. Mechanisms of action, indications, relative advantages and contraindications of both approaches are also described in detail: agonists and antagonists of gonadotropin-releasing hormone, selective modulators of progesterone receptors, embolization of uterine arteries, MRI-guided focused ultrasound, radiofrequency ablation, hysteroscopic and laparoscopic myomectomy. Special attention is paid to the preservation of reproductive function and a personalized approach to treatment.

Key words: *leiomyoma, therapy, medical treatment, intrauterine system, minimally invasive methods, organ-preserving surgical methods, robotic myomectomy, algorithm.*

Introduction. Uterine leiomyoma (myoma, fibromyoma) is a benign monoclonal tumor arising from smooth muscle cells of the myometrium. Epidemiological studies have shown that the disease is present in 20-40% of women of reproductive age. The main symptoms are abnormal uterine bleeding leading to iron deficiency anemia, chronic pelvic pain, dysmenorrhea, and dyspareunia. This tumor is one of the leading causes of infertility and miscarriages in the world [1]. If earlier hysterectomy (uterus removal) was considered the "gold standard" of treatment, today the main priority is an organ-preserving approach - especially for women of reproductive age.

Results

The method of treatment depends on the location, size and number of the node. The classification with the highest acceptance in clinical practice is the FIGO (International Federation of Gynecology and Obstetrics) classification, which categorizes fibroid nodes according to types (0-8) according to their location in relation to the uterine cavity and serous membrane [2, 3].

Submucosal nodes (types 0-2) are the most common cause of abnormal uterine bleeding and infertility due to deformation of the uterine cavity and implantation failure. Intramural nodes (types 3-4) are among the most common and may be symptomatic in adults. Less common are subserosal nodes (types 5-8), which have less significant symptoms associated with menstruation, but can increase pelvic pain, and can also compress neighboring organs [4].

Not all fibroids require active treatment. Asymptomatic small nodes discovered by chance require dynamic monitoring: ultrasound every 6-12 months. Treatment is recommended only in the presence of the following factors:

1) abnormal uterine bleeding with the onset of iron deficiency anemia (hemoglobin < 110 g/l);
2) chronic pelvic pain;
3) dysmenorrhea and dyspareunia, decrease in quality of life;
4) bladder dysfunction (for example, frequent urination, incontinence) and/or rectal dysfunction;
5) rapid growth of nodes (more than 25% of the volume in 6 months);
6) infertility or miscarriage in history associated with fibroids;
7) uterine size ≥12 weeks of pregnancy;
8) complications during pregnancy or a node that interferes with childbirth.

When choosing a treatment method, the patient's age and reproductive plan, the number, size, and location of nodes (according to the FIGO classification), the severity of symptoms, and accompanying complications are taken into account [5].

Medical treatment

1. GnRH agonists (leuprorelin, triptorelin, goserelin, buserelin). The mechanism of action is desensitization of pituitary receptors to GnRH (gonadotropin-releasing hormone), which causes a decrease in the production of gonadotropins - and, therefore, sex hormones - the achievement of medical menopause. In the presence of estrogen deficiency, fibroid nodes decrease in volume by 30-50%. Clinical application - preoperative preparation: reduction of myoma volume, stabilization of anemia and cessation of bleeding. The duration of the course is 3-6 months due to side effects associated with hypoestrogen: vasomotor (flushes, sweating), decreased bone mineral density, vaginal dryness, decreased libido. After stopping the therapy, the nodes return to the initial volume after 3-6 months [6].

2. GnRH antagonists - elagolix and relugolix. Unlike agonists, antagonists selectively block GnRH receptors, so they can cause a rapid, reversible effect without a previous increase in the level of gonadotropins (flash phenomenon). This avoids the typical initial increased severity of symptoms observed with GnRH agonists. The combination of GnRH antagonists with low doses of hormones ("additional" therapy - estradiol plus progestin) allows to reduce side effects, maintain the effectiveness of treatment and extend the duration of treatment up to 24 months [7].

3. Selective progesterone receptor modulators (SPRMs) (ulipristal acetate). The drug acts on progesterone receptors located in fibroids and endometrial tissue, which leads to apoptosis of leiomyoma cells without a significant decrease in the level of estrogen. The result is the cessation of bleeding in 90% of these patients and a reduction in the total volume of nodes by 25%-40%. However, due to cases of liver damage, the European Medicines Agency (EMA) introduced restrictions on the use of UPA [8].

4. The levonorgestrel-releasing intrauterine system is a powerful tool in the treatment of menorrhagia with uterine fibroids - it reduces the degree of blood loss by 70-90%, leads to less dysmenorrhea and higher hemoglobin levels. But it does not change the size of the nodes, and the introduction is difficult when the uterine cavity is deformed by a submucosal node. This is the best technique for intramural fibromas and subserosal fibromas without cavity deformation [9].

5. As auxiliary agents are used: tranexamic acid (antifibrinolytic agent) - to prevent or reduce uterine bleeding in a dose of 1-1.5 g three times a day during menstruation; nonsteroidal anti-inflammatory drugs (ibuprofen, naproxen) - to reduce pain and blood loss by inhibiting the synthesis of prostaglandins; iron preparations (oral or parenteral) - for correction of iron deficiency anemia before surgical intervention.

Minimally invasive methods

1. Uterine artery embolization (UAE) is an endovascular surgical technique. Cells deprived of blood supply begin to necrotize and lose their volume by 40-60%. 85-90% of patients report clinical improvement (reduction of bleeding and pain syndrome). A complication is the postembolization syndrome (pain, fever, nausea), which affects most patients and is adequately controlled by analgesics for 3-7 days in most cases. Rare complications include infection and incomplete embolization. UAE is not indicated for women planning pregnancy due to possible further damage to the ovarian reserve and uterine perfusion [10].

2. MRI-guided focused ultrasound therapy (MRgFUS/ HIFU) is a non-invasive technique that integrates the therapeutic effect of high-intensity focused ultrasound with real-time navigation of MRI in the patient. Ultrasound waves heat the tissue of the node to 60-85°C, creating coagulation necrosis. The advantages are complete non-invasiveness, absence of general anesthesia and quick recovery (the patient is discharged on the day of the procedure) [11].

3. Radiofrequency ablation (RFA) Radiofrequency ablation, performed under ultrasound control, uses the thermal energy of a radiofrequency current to destroy the tissue of the node. Clinical results of RFA demonstrate a reduction in the volume of nodes by 40-75% and a significant improvement in the quality of life. The method is well tolerated, the level of complications is low, and recovery after surgery is much faster than after open or laparoscopic myomectomy [12].

Organ-preserving surgical methods

1.Hysteroscopic myomectomy is the gold standard for the treatment of submucous fibroid nodes (types 0, 1 and 2 according to FIGO). Clinical effectiveness in abnormal uterine bleeding reaches 85-90%, the frequency of pregnancy after removal of the submucosal node increases by 25-30%. Hospitalization lasts 1-2 days, full recovery - 3-5 days. Recurrence of submucosal myoma within 5 years is observed in 10-15% of patients.

2. Laparoscopic myomectomy is a standard surgical treatment of subserous and intramural tumors of the uterus. Compared to open (laparotomy) myomectomy, laparoscopic access provides significantly less blood loss (on average 150-300 ml vs. 400-600 ml), shorter hospitalization (2-3 days vs. 5-7 days), faster recovery (7-10 days vs. 4-6 weeks), lower risk of adhesions and better cosmetic results. The method is indicated for nodes with a diameter of up to 8–10 cm and up to 3–4 nodes. A key technical aspect is the quality of stitching the bed of the knot: insufficiently tight stitching increases the risk of uterine rupture during the next pregnancy. Recurrence within 5 years is noted in 15-25% of patients, mainly due to the presence of small nodes that were not detected during the operation.

3. Robotic myomectomy is performed using da Vinci or Hugo surgical systems. The advantages are three-dimensional stereoscopic visualization with a 10-fold magnification, a 7-step range of instrument movements and filtering of the surgeon's hand tremor, which greatly facilitates the careful multi-layer suturing of the myometrium in complex places where nodes are located, as well as multiple nodes. The main limitation remains the high cost of the system and the need for special training of the surgeon [13].

Algorithm for choosing a treatment method

Choosing the optimal method of treatment is a complex decision that is made jointly by the doctor and the patient. The general algorithm can be presented as follows:

1. Assess the presence and severity of symptoms.
2. Determine the patient's reproductive plans.
3. Clarify the characteristics of nodes (FIGO type, size, number) based on ultrasound and MRI data.
4. For submucosal nodes (0-2) - hysteroscopic myomectomy.
5. For intramural/ subserosal nodes up to 8 cm - laparoscopic myomectomy, RFA or EMA.
6. For large or multiple nodes - open myomectomy.
7. Drug therapy - as independent treatment (if surgery is contraindicated) or pre-operative preparation.

Conclusions. Modern tactics of uterine myoma treatment are based on the principles of individual approach, preservation of reproductive function and minimization of surgical trauma. Drug therapy of the new generation - oral GtRH antagonists in combination with hormonal therapy - has opened opportunities for long-term conservative treatment with a satisfactory safety profile. Minimally invasive interventional methods (EMA, MRgFUS, RFA) have found their niche between medical and surgical treatment. Endoscopic surgery - hysteroscopic and laparoscopic myomectomy - has become the standard of organ-preserving surgical treatment, which allows preserving the uterus and reproductive function in the vast majority of patients. A significant achievement is the emergence of robotic surgical systems that expand the possibilities of minimally invasive surgery in complex clinical situations. Despite numerous new methods, open myomectomy retains its place for large and multiple nodes. Hysterectomy, which used to be the standard of care, is now used only in women who are not planning pregnancy and when all organ-preserving approaches are ineffective or contraindicated. The further development of gene therapy, the development of new targeted molecular agents and the improvement of minimally invasive technologies allow us to hope for even more effective and safe treatment of uterine fibroids in the future.

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ПРОКАЛЬЦИТОНІН ЯК МАРКЕР БАКТЕРІАЛЬНОЇ ІНФЕКЦІЇ: КЛІНІЧНЕ ЗНАЧЕННЯ

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PROCALCITONIN AS A BIOMARKER OF BACTERIAL INFECTION: CLINICAL SIGNIFICANCE

Анотація.

Прокальцитонін (PCT) є сучасним біомаркером, що широко використовується в клінічній практиці для діагностики бактеріальних інфекцій та сепсису. Його рівень у крові значно підвищується у відповідь на системну бактеріальну інфекцію, тоді як при вірусних або неінфекційних запальних процесах залишається відносно низьким. Це дозволяє застосовувати прокальцитонін для диференціальної діагностики, оцінки тяжкості інфекції та контролю ефективності антибактеріальної терапії. У сучасних дослідженнях доведено, що використання PCT сприяє зниженню необґрунтованого призначення антибіотиків і, відповідно, стримуванню антибіотикорезистентності. Разом з тим існують обмеження, пов'язані з підвищенням рівня прокальцитоніну при неінфекційних станах, що потребує комплексного клінічного підходу до інтерпретації результатів. Таким чином, прокальцитонін є важливим, але не абсолютним маркером бактеріальної інфекції.

Abstract.

Procalcitonin (PCT) is a modern biomarker widely used in clinical practice for the diagnosis of bacterial infections and sepsis. Its serum levels significantly increase in response to systemic bacterial infection, whereas in viral or non-infectious inflammatory conditions they remain relatively low. This makes procalcitonin useful for differential diagnosis, assessment of infection severity, and monitoring of antibacterial therapy effectiveness. Recent studies demonstrate that PCT-guided strategies help reduce unnecessary antibiotic prescriptions and limit antimicrobial resistance. However, certain limitations exist, including elevated PCT levels in non-infectious conditions, which requires careful clinical interpretation. Therefore, procalcitonin is an important but not absolute marker of bacterial infection.

***Ключові слова**: прокальцитонін, бактеріальна інфекція, сепсис, біомаркери, антибіотикотерапія, діагностика.*

***Key words**: procalcitonin, bacterial infection, sepsis, biomarkers, antibiotic therapy, diagnosis.*

Прокальцитонін (PCT) є 116-амінокислотним пептидом, який у фізіологічних умовах виступає попередником гормону кальцитоніну та синтезується переважно C-клітинами щитоподібної залози. У здорових осіб його концентрація в сироватці крові є мінімальною і зазвичай не перевищує 0,05 нг/мл. Проте у відповідь на системну бактеріальну інфекцію відбувається активація альтернативних шляхів синтезу прокальцитоніну в різних тканинах організму, зокрема в печінці, легенях, нирках і клітинах імунної системи. Така екстратиреоїдна продукція обумовлена дією бактеріальних токсинів та медіаторів запалення, що забезпечує швидке зростання рівня PCT у системному кровотоці [1,2]. Це явище є патофізіологічною основою використання прокальцитоніну як специфічного маркера бактеріального запалення.

Механізми регуляції синтезу прокальцитоніну є складними та залежать від характеру інфекційного агента. При бактеріальних інфекціях активуються прозапальні цитокіни, такі як інтерлейкін-1β, інтерлейкін-6 та фактор некрозу пухлин-α, які стимулюють продукцію PCT у різних тканинах [3]. Водночас при вірусних інфекціях домінує продукція інтерферону-γ, який пригнічує синтез прокальцитоніну, що забезпечує відносну специфічність цього біомаркера для бактеріальних процесів [4]. Завдяки цьому прокальцитонін широко застосовується для диференціальної діагностики інфекційної етіології, особливо у випадках, коли клінічна картина є неспецифічною.

Клінічна значущість прокальцитоніну значною мірою визначається його кінетикою. Встановлено, що рівень PCT починає підвищуватися вже через 3–6 годин після початку бактеріальної інфекції, досягає максимальних значень протягом 12–24 годин і поступово знижується при ефективному лікуванні [5]. Така динаміка дозволяє використовувати прокальцитонін не лише як діагностичний, але й як прогностичний маркер. Порівняно з традиційними показниками, такими як С-реактивний білок, прокальцитонін характеризується швидшою реакцією на інфекційний процес і більшою специфічністю щодо бактеріальної етіології [6].

Особливу роль прокальцитонін відіграє у діагностиці сепсису та септичного шоку — станів, що супроводжуються високою летальністю та потребують негайного втручання. Підвищення рівня PCT корелює з тяжкістю системної запальної відповіді, ступенем органної дисфункції та ризиком несприятливого результату [7]. Численні дослідження підтверджують, що високі значення прокальцитоніну асоціюються з підвищеною смертністю, що дозволяє використовувати цей показник для стратифікації ризику пацієнтів та прогнозування перебігу захворювання [8,9]. Водночас найбільшу клінічну цінність має оцінка динаміки показника, оскільки зниження його рівня свідчить про ефективність лікування.

У клінічній практиці застосовуються різні порогові значення прокальцитоніну, які допомагають інтерпретувати результати лабораторних досліджень. Рівень PCT менше 0,1 нг/мл, як правило, свідчить про низьку ймовірність бактеріальної інфекції, тоді як значення понад 0,5 нг/мл вказує на високу ймовірність її наявності. Концентрації, що перевищують 2,0 нг/мл, характерні для тяжких системних інфекцій і сепсису [10]. Однак слід враховувати, що універсальні порогові значення не є абсолютними і можуть змінюватися залежно від клінічного контексту, віку пацієнта та супутніх захворювань [11].

Одним із найбільш вагомих напрямів застосування прокальцитоніну є оптимізація антибіотикотерапії. У сучасних умовах, коли проблема антибіотикорезистентності набуває глобального масштабу, особливого значення набувають підходи, спрямовані на раціональне використання антибактеріальних препаратів. Рандомізовані клінічні дослідження довели, що використання PCT-орієнтованих алгоритмів дозволяє безпечно скоротити тривалість антибіотикотерапії без підвищення ризику ускладнень або летальності [12,13]. Це досягається за рахунок об’єктивної оцінки необхідності продовження лікування на основі рівня біомаркера.

Сучасні клінічні рекомендації пропонують використовувати динаміку прокальцитоніну як критерій для припинення антибіотикотерапії. Зокрема, зниження рівня PCT на ≥80% від пікового значення або досягнення концентрації нижче 0,25–0,5 нг/мл розглядається як підстава для завершення лікування [14]. Такий підхід дозволяє значно зменшити тривалість антибіотикотерапії, мінімізувати побічні ефекти та знизити ризик формування резистентності мікроорганізмів [15].

У відділеннях інтенсивної терапії прокальцитонін широко використовується як інструмент моніторингу перебігу інфекційного процесу. Серійні вимірювання рівня PCT дозволяють оцінити ефективність лікування, своєчасно виявити неефективність антибактеріальної терапії та прийняти рішення щодо її корекції [16]. Таким чином, прокальцитонін виступає не лише діагностичним, але й динамічним маркером, що відображає перебіг захворювання.

Важливим аспектом є застосування прокальцитоніну при інфекціях дихальних шляхів, які є однією з найпоширеніших причин призначення антибіотиків. Доведено, що використання PCT-орієнтованих алгоритмів у пацієнтів із гострим бронхітом та позалікарняною пневмонією дозволяє суттєво знизити частоту необґрунтованого призначення антибактеріальних препаратів [17]. При цьому клінічні результати, включаючи тривалість захворювання та частоту ускладнень, залишаються незмінними [18], що підтверджує безпечність такого підходу.

Разом з тим, незважаючи на значні переваги, прокальцитонін має певні обмеження, які необхідно враховувати у клінічній практиці. Підвищення рівня PCT може спостерігатися при неінфекційних станах, таких як великі хірургічні втручання, полі травма, опіки, тяжкий панкреатит або кардіогенний шок [19]. У таких випадках інтерпретація результатів повинна здійснюватися з урахуванням клінічної картини та інших лабораторних показників.

Крім того, на ранніх стадіях інфекційного процесу або при локалізованих бактеріальних інфекціях рівень прокальцитоніну може залишатися в межах норми, що обмежує його чутливість [20]. Це підкреслює необхідність комплексного підходу до діагностики, який включає поєднання клінічних, лабораторних та інструментальних методів дослідження.

Таким чином, прокальцитонін є високоспецифічним та клінічно значущим біомаркером бактеріальної інфекції, який відіграє важливу роль у діагностиці, прогнозуванні та оптимізації лікування. Його ефективне використання можливе лише за умови правильного трактування результатів у контексті клінічної ситуації.

Висновки. Прокальцитонін є сучасним високоспецифічним біомаркером бактеріальної інфекції, який має важливе значення у диференціальній діагностиці, оцінці тяжкості інфекційного процесу та моніторингу ефективності лікування, особливо при сепсисі; його використання у клінічній практиці сприяє раціоналізації антибіотикотерапії та зменшенню необґрунтованого призначення антибактеріальних препаратів, однак інтерпретація результатів повинна здійснюватися комплексно з урахуванням клінічного контексту та можливих неінфекційних підвищення показника.

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THE ROLE OF HYPERURICEMIA IN THE PROGRESSION OF MICROVASCULAR AND MACROVASCULAR COMPLICATIONS IN TYPE 2 DIABETES MELLITUS

Abstract

Type 2 diabetes is the leading cause of microvascular and macrovascular complications, highlighting the importance of studying factors that can modify their course. In this context, hyperuricemia is considered an independent metabolic and pathogenetically active factor that potentially influences the rate of progression of diabetic complications and is associated with more severe damage to target organs. Including uric acid level measurement in the standard examination of patients with diabetes mellitus may improve the effectiveness of cardiometabolic risk stratification and ensure early diagnosis of complications.

Keywords: *type 2 diabetes, hyperuricemia, diabetic nephropathy, cardiometabolic risk, retinopathy, endothelial dysfunction, insulin resistance, microvascular complications, macrovascular complications.*

Introduction. Type 2 diabetes mellitus (T2DM) is a chronic endocrine disorder characterized by a combination of insulin resistance and a progressive decline in the functional capacity of pancreatic β-cells to secrete insulin, resulting in persistent hyperglycemia and damage to target organs [1]. It is the development of microvascular and macrovascular complications that determines the disease prognosis, disability rate, and mortality. Although diabetes itself is the primary factor in the development of these complications, their clinical severity and rate of progression vary significantly among patients, indicating the involvement of additional pathogenic factors. Hyperuricemia is considered one such modifying factor, and the results of studies using Mendelian randomization confirm a causal relationship between uric acid levels and the development of diabetic complications, allowing hyperuricemia to be viewed not only as a marker, but also as a direct pathogenic factor in target organ damage, leading to a decrease in glomerular filtration rate, progression of albuminuria and retinopathy, and an increased cardiovascular risk [2, 3].

Kidney damage

Diabetic nephropathy is one of the key microvascular complications of diabetes and a leading cause of chronic kidney disease. Hyperuricemia is considered an independent factor associated with an earlier onset and accelerated progression of kidney damage. Elevated uric acid levels are associated with impaired endothelial function in the glomerular apparatus, activation of the renin-angiotensin system, and the induction of oxidative stress. An important role is played by the activation of the NLRP3 inflammasome, followed by the production of pro-inflammatory cytokines (TNF-α, IL-6, IL-1β), which contributes to the development of intrarenal inflammation and fibrosis. Morphologically, thickening of the walls of afferent arterioles, increased intraglomerular pressure, tissue ischemia and hypoxia, and subsequent development of tubulointerstitial fibrosis are observed. Clinically, this manifests as progression of albuminuria and a decrease in glomerular filtration rate; even within normal creatinine ranges and in the absence of overt albuminuria, hyperuricemia may serve as an early marker of endothelial dysfunction and a predictor of subsequent decline in renal function [4, 5].

Cardiovascular complications

Along with nephropathy, hyperuricemia plays a significant role in the development of cardiovascular complications, as it contributes to the onset of hypertension, the progression of coronary artery disease, and heart failure. The association between elevated uric acid levels and insulin resistance, dyslipidemia, and other components of metabolic syndrome creates a pathogenic "vicious cycle" in which metabolic and vascular disorders mutually potentiate one another, increasing the risk of macrovascular damage. Excess uric acid stimulates the renin-angiotensin system and the proliferation of vascular smooth muscle cells, contributing to vasoconstriction, vascular wall remodeling, and the development of hypertension. At the same time, it participates in atherogenesis by enhancing the oxidation of low-density lipoproteins and sustaining vascular inflammation, which leads to the development of coronary artery disease. Activation of the xanthine oxidase pathway with excessive formation of reactive oxygen species contributes to cardiomyocyte damage, the development of myocardial fibrosis, and left ventricular remodeling, which underlies the development of heart failure [6, 7].

Damage to the eye

Equally important is the effect of elevated uric acid levels on the development of diabetic retinopathy, which is associated with more severe retinal damage and a higher risk of progression to proliferative forms of retinopathy, due to an imbalance between vasodilatory and vasoconstrictive mechanisms, reduced nitric oxide bioavailability, and activation of inflammatory signaling pathways. The activation of oxidative stress and inflammatory mechanisms, particularly via the NLRP3 inflammasome, leads to increased vascular permeability, retinal edema, and microthrombosis [5].

Conclusion. The data obtained indicate that hyperuricemia in patients with concomitant T2DM is not only a metabolic disorder but also an important pathogenic factor capable of potentiating damage to target organs regardless of the degree of glycemic control. Its effect is mediated through a complex of interrelated mechanisms, creating conditions for a more aggressive course of both microvascular and macrovascular complications. It is important to note that elevated uric acid levels may precede the clinical manifestation of damage to the kidneys, cardiovascular system, and retina, which underscores its significance as an early predictor of structural and functional changes. This explains the variability in the course of diabetes mellitus among patients with similar glycemic profiles and underscores the role of hyperuricemia as an additional risk stratification criterion. From a clinical standpoint, it is advisable not only to routinely measure uric acid levels but also to interpret them in conjunction with other metabolic and functional parameters. This approach allows for the identification of patients at high risk of complication progression at the preclinical stage and justifies the need for early implementation of personalized preventive and therapeutic strategies.

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ЗООНОЗНА ТРАНСМІСІЯ МАВПЯЧИХ ПІНИСТИХ ВІРУСІВ(SFV) ТА ЇЇ ЗНАЧЕННЯ ДЛЯ ГЛОБАЛЬНОЇ СИСТЕМИ ОХОРОНИ ЗДОРОВ'Я

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ZOONOTIC TRANSMISSION OF SIMIAN FOAMY VIRUSES (SFV) AND ITS IMPLICATIONS FOR THE GLOBAL HEALTH SYSTEM

Анотація.

У даній статті проводиться поглиблений аналіз підродини Spumaretrovirinae, відомих як пінисті віруси (FV), з акцентом на їхню здатність до міжвидового переходу від приматів до людини. Детально розглянуто еволюційну стабільність вірусу, особливості його унікального циклу реплікації, який поєднує ознаки ретровірусів та гепаднавірусів.

Abstract:

This article provides an in-depth analysis of the subfamily Spumaretrovirinae, known as foamy viruses (FV), with a focus on their ability to cross-species from primates to humans. The evolutionary stability of the virus, features of its unique replication cycle, which is similar to retroviruses and hepadnaviruses, are noted in detail.

Ключові слова: *мавпячий пінистий вірус, SFV, зооноз, ретровіруси, міжвидова передача, епідеміологія, генна терапія, біобезпека.*

Key words: *simian foamy virus, SFV, zoonosis, retroviruses, interspecies transmission, epidemiology, gene therapy, biosafety.*

Вступ. Історія вивчення ретровірусів свідчить про те, що найбільш небезпечні для людства патогени, такі як ВІЛ-1 та ВІЛ-2, мають зоонозне походження. Проте серед широкого спектру симіарних (мавпячих) вірусів саме пінисті віруси (Simian Foamy Viruses, SFV) демонструють найвищу частоту переходів до людей. Пінисті віруси є надзвичайно давніми патогенами. Філогенетичні дослідження вказують на те, що вони коеволюціонували зі своїми господарями-приматами протягом щонайменше 60 мільйонів років, що робить їх найбільш стабільною групою вірусів, відомих науці. [1, 5]

Унікальність патогенезу SFV полягає в його "мовчазному" характері. У природних умовах вірус вражає майже всі види мавп Старого та Нового світу. Основним місцем активної реплікації вірусу є епітелій ротової порожнини, де вірусні частинки масово виділяються зі слиною. Водночас у системному кровотоці та лімфоїдних тканинах вірус перебуває у латентному стані у формі інтегрованої провірусної ДНК. Така стратегія виживання дозволяє вірусу уникати імунної відповіді господаря та забезпечує довічну персистенцію. Для людини цей вірус наразі вважається апатогенним, оскільки у зоонозно інфікованих осіб не виявлено специфічних клінічних симптомів або гематологічних відхилень. Проте здатність ретровірусів до раптової зміни вірулентності при зміні господаря змушує наукову спільноту розглядати SFV як об’єкт підвищеної уваги. [3, 4]

Мета дослідження: Метою цієї роботи є всебічне вивчення молекулярно-біологічних механізмів функціонування пінистих вірусів та ідентифікація ключових соціально-демографічних і клінічних факторів, що сприяють їх успішній трансмісії від приматів до людей. Робота спрямована на систематизацію накопиченого світового досвіду для оцінки ризиків виникнення нових інфекційних хвороб та визначення потенціалу використання SFV у сучасних методах генної терапії. [3, 10]

Матеріали та методи: Дане дослідження базується на систематизації та критичному аналізі даних світової літератури, результатів молекулярних досліджень та епідеміологічних звітів за останні десятиліття. Методологія включала пошук у міжнародних базах даних (PubMed, EMBASE) за ключовими запитами, що охоплюють структуру геному FV та задокументовані випадки інфікування людей. Особлива увага приділялася порівнянню філогенетичних дерев вірусів та їх господарів для підтвердження коеволюції. [5, 8, 23]

Критеріями включення досліджень до аналізу були: підтвердження інфекції за допомогою ПЛР-діагностики (виявлення інтегрованої ДНК у лімфоцитах) та серологічних методів (вестерн-блот для ідентифікації антитіл до білків Gag та Bet). Пошукова стратегія охоплювала дані з усіх континентів, де зафіксовано контакт людини з приматами, зокрема дослідження професійних груп у Північній Америці та сільських громад в Африці та Азії. Статистична обробка включала аналіз відношення шансів (OR) інфікування залежно від віку, типу контакту (укуси, контакт із кров'ю) та тривалості експозиції. [51, 66, 67]

Результати дослідження та їх обговорення: У ході підготовки статті було здійснено системний огляд наукових публікацій за останні 30 років, що містяться у базах даних PubMed, Scopus та Google Scholar. Методологія включала відбір досліджень, які базуються на верифікованих методах діагностики: виявленні провірусної ДНК за допомогою полімеразної ланцюгової реакції (ПЛР) та ідентифікації антитіл до структурних (Gag) та допоміжних (Bet) білків вірусу методом вестерн-блоту. [5, 7]

Окремо аналізувалися дані епідеміологічних моніторингів у трьох групах:

1. Особи з професійною експозицією (працівники віваріїв, зоопарків та дослідницьких центрів у США та Європі);
2. Мисливці та особи, залучені до обробки дикого м'яса в країнах Центральної Африки;
3. Населення регіонів Азії, де існують тісні побутові контакти з приматами в межах урбанізованих та храмових територій. [6, 9]

4. Результати: Молекулярні особливості та механізми передачі

Аналіз геномної структури SFV виявив фундаментальні відмінності від класичних ретровірусів. По-перше, зворотна транскрипція у пінистих вірусів завершується ще до виходу віріона з клітини, що призводить до наявності ДНК-геному безпосередньо в інфекційній частинці. Це робить вірус більш стійким та готовим до негайної інтеграції в клітину нового господаря. По-друге, білок Pol (полімераза) транслюється незалежно від білка Gag, що зближує SFV із вірусом гепатиту B. [2, 10]

Щодо механізмів трансмісії, результати підтверджують, що основним вектором передачі є слина. Провідним фактором ризику визначено глибокі укуси, що супроводжуються пошкодженням тканин. У мисливців Центральної Африки рівень інфікування досягає 27%, що корелює з частими травмами під час полювання на шимпанзе та горил. У лабораторних умовах Північної Америки рівень серопозитивності становить 2–5%, причому 93% осіб з антитілами мають підтверджену ПЛР-методом персистентну інфекцію. [3, 6, 8]

Статистично значущим чинником є також вік експозиції. Ризик інфікування зростає з віком, що пояснюється тривалішим періодом потенційних контактів із тваринами. Важливо зазначити, що на відміну від ВІЛ, SFV демонструє надзвичайну генетичну консервативність. Висока точність зворотної транскриптази (RT) *in vivo* мінімізує кількість помилок при реплікації, що забезпечує стабільність вірусного геному протягом десятиліть перебування в організмі людини. [7, 9]

5. Обговорення: Соціальні бар'єри та клінічні виклики

Обговорення результатів вказує на існування серйозних бар’єрів для контролю над поширенням SFV. В африканському контексті основним бар'єром є економічна залежність місцевого населення від полювання на диких тварин (бушміт). У регіонах, де це є основним джерелом білка, адміністративні заборони на контакти з приматами не є ефективними. В Азії бар’єром виступають релігійні та культурні традиції, згідно з якими мавпи вважаються священними тваринами, що стимулює пряме годування з рук та масовий обмін слиною. [6, 7]

У розвинених країнах бар'єром для діагностики є відсутність стандартних скринінгових протоколів для осіб, що мали контакт із приматами. Оскільки вірус не викликає гострих симптомів, інфіковані особи залишаються поза увагою системи охорони здоров'я. Проте виявлено, що у випадку коінфекції (наприклад, SFV + ВІЛ), імуносупресія господаря може активувати реплікацію пінистого вірусу за межами ротової порожнини, зокрема в кишечнику, що може посилити патологічний стан пацієнта. [8, 9]

Використання SFV як векторів у генній терапії відкриває нові перспективи завдяки їхній великій ємності геному (можливість вставки до 9 Кб ДНК). Вони успішно протестовані для лікування дефіциту адгезії лейкоцитів у собак і розглядаються як засіб доставки факторів, що пригнічують реплікацію ВІЛ. Однак стабільність вірусу та ризик рекомбінації потребують суворого нагляду при розробці таких біотехнологічних продуктів. [10]

Висновки: Мавпячі пінисті віруси є найбільш успішними ретровірусами з точки зору міжвидової передачі, проте на даному етапі вони демонструють низьку патогенність для людини. Основними предикторами інфікування є характер контакту (глибокі укуси) та професійна діяльність, пов'язана з приматами або їхніми тканинами. Еволюційна стабільність геному SFV та висока точність реплікації роблять його унікальним об'єктом для вивчення вірусної генетики та розробки систем генної терапії.Глобальні стратегії охорони здоров'я повинні включати моніторинг SFV-інфекцій у регіонах з високою густотою контактів "людина-мавпа" для запобігання непередбачуваним змінам вірулентності вірусу. [3, 4, 10]

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БІОБЕЗПЕКА ТА КОНТРОЛЬ ІНФЕКЦІЙ У СУЧАСНИХ СТАЦІОНАРАХ

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BIOSAFETY AND INFECTION CONTROL IN MODERN HOSPITALS

Анотація.

У статті досліджується комплексна проблема забезпечення біобезпеки в умовах сучасних лікувально-профілактичних закладів. Розглядаються не лише технічні аспекти (стерилізація, вентиляція), а й людський фактор як критична ланка контролю інфекцій. Аналізуються сучасні протоколи запобігання внутрішньолікарняним інфекціям (ВЛІ), бар'єрна медицина та психологічні аспекти комплаєнсу персоналу. Робота підкреслює, що біобезпека — це не набір інструкцій, а жива екосистема, яка потребує постійного оновлення та гуманного підходу до кожного учасника лікувального процесу. [1, 2]

Abstract:

The article examines the complex problem of ensuring biosafety in modern medical and preventive institutions. It considers not only technical aspects (sterilization, ventilation), but also the human factor as a critical link in infection control. It analyzes modern protocols for the prevention of nosocomial infections (NOIs), barrier medicine, and psychological aspects of staff compliance. The work emphasizes that biosafety is not a set of instructions, but a living ecosystem that requires constant updating and a humane approach to each participant in the medical process. [1, 2]

Ключові слова: *біобезпека, інфекційний контроль, ВЛІ, антибіотикорезистентність, дезінфекція, медична етика, бар'єрна медицина.*

Key words: *biosafety, infection control, VLI, antibiotic resistance, disinfection, medical ethics, barrier medicine.*

Вступ. Сьогодні лікарня — це не просто місце надання допомоги, а складне середовище, де щосекунди відбувається невидима боротьба з мікросвітом. Внутрішньолікарняні інфекції (ВЛІ) залишаються однією з головних причин смертності та подовження термінів госпіталізації в усьому світі. Проте за сухими цифрами статистики стоять людські долі. Біобезпека в лікарні — це насамперед про цінність життя. Ми звикли сприймати інфекційний контроль як набір жорстких правил, але сучасна медицина переходить до формату "культури безпеки", де кожен лікар, медична сестра та санітар розуміють не лише «що» робити, а й «чому» це важливо для конкретного пацієнта. [1, 3]

Актуальність теми посилюється стрімким зростанням антибіотикорезистентності. "Супермікроби", що живуть у стінах лікарень, стають дедалі агресивнішими. У цьому контексті інфекційний контроль стає останньою лінією оборони. Гуманізація цього процесу означає відхід від каральної системи перевірок до системи взаємопідтримки та усвідомленої відповідальності. Кожен вчасно продезінфікований лоток або правильно вдягнена маска — це врятоване життя, яке могло обірватися через випадкову бактерію. [4, 5]

Мета дослідження: Метою даної роботи є системний аналіз сучасних стратегій біобезпеки в лікарняних умовах, виявлення критичних факторів ризику порушення інфекційного контролю та обґрунтування інтегрованого підходу, який поєднує інженерно-технічні рішення з психолого-освітньою роботою серед медичного персоналу. [2, 6]

Матеріали та методи: Для підготовки матеріалу було проаналізовано протоколи ВООЗ, CDC (Центрів з контролю та профілактики захворювань) та актуальні накази МОЗ України. У дослідженні використано методи системного огляду, аналізу випадків (case studies) спалахів ВЛІ та опитування медичних працівників щодо бар'єрів, які заважають дотриманню правил біобезпеки. Особлива увагу приділено методології "чистих рук" та зонуванню лікарень як основних інструментів стримування патогенів. [5, 7]

Результати дослідження та їх обговорення:

Результати аналізу свідчать, що біобезпека лікарні тримається на трьох "китах": архітектурних рішеннях, технологічних процесах та людській дисципліні.

Архітектурне та інженерне забезпечення. Сучасна лікарня повинна бути спроєктована за принципом "потоковості". Це означає, що брудні та чисті інструменти, інфіковані пацієнти та особи з імуносупресією ніколи не мають перетинатися в одному коридорі. Особливу роль відіграє система вентиляції з негативним тиском у боксах для інфекційних хворих та позитивним — в операційних. Це фізичний бар'єр, який не дає мікробам "подорожувати" лікарнею. [1, 8]

Технологія дезінфекції та стерилізації. Ми бачимо перехід від хлорвмісних агресивних засобів до сучасних ензимних дезінфектантів, які менш токсичні для персоналу, але більш ефективні проти біоплівок. Використання автоматизованих миючих машин замість ручного миття інструментів значно знижує ризик поранень та інфікування медичного персоналу гемоконтактними інфекціями. [6, 7]

Людський фактор. Дослідження показують, що навіть у найтехнологічніших лікарнях рівень дотримання гігієни рук часто не перевищує 40-60%. Це "ахіллесова п'ята" біобезпеки. Основним результатом аналізу стало підтвердження того, що просто встановити дозатори з антисептиком недостатньо. Потрібна гуманізація навчання: персонал має відчувати, що контроль інфекцій захищає і їх самих, і їхні родини від занесення резистентної флори додому. [9, 10]

5. Обговорення: Бар'єри та виклики гуманізації контролю

Обговорюючи проблеми біобезпеки, неможливо оминути тему професійного вигорання. Втомлений лікар частіше припускається помилок у дотриманні асептики. Тому "гуманізований контроль" передбачає створення зручних умов: антисептики мають бути "під рукою", алгоритми вдягання засобів індивідуального захисту (ЗІЗ) — простими та інтуїтивно зрозумілими. [3, 9]

Ще одним викликом є **антибіотикорезистентність**. Лікарні стали "лабораторіями еволюції", де виживають лише найстійкіші штами *Klebsiella pneumoniae* чи *Staphylococcus aureus*. Контроль інфекцій сьогодні — це не просто прибирання, це інтелектуальна робота епідеміолога, який відстежує кожен штам у відділенні. Бар'єром тут часто стає застаріле обладнання лабораторій, що не дозволяє швидко ідентифікувати збудника. [4, 8]

Також важливо враховувати **психологічний бар'єр пацієнтів**. Людина в ізоляції почувається самотньою. Гуманна біобезпека шукає баланс між суворим карантином та можливістю спілкування, використовуючи сучасні засоби зв'язку та прозорі скляні перегородки, що дозволяють візуальний контакт. [2, 10]

Висновки: Біобезпека в лікарні — це не лише технічне завдання, а етичний обов'язок кожного працівника перед пацієнтом. Автоматизація процесів дезінфекції та сучасні інженерні системи вентиляції є критично важливими, але їх ефективність зводиться нанівець без усвідомленого комплаєнсу персоналу. Система інфекційного контролю має бути гнучкою та "людяною", фокусуючись на підтримці медика, а не на його покаранні. Постійне навчання, засноване на доказовій медицині, та впровадження системи stewardship (раціонального використання антибіотиків) є єдиним шляхом до стримування госпітальних інфекцій. [5, 6, 10]

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ГЕРПЕСВІРУСНІ ІНФЕКЦІЇ: КЛІНІЧНІ АСПЕКТИ ТА СУЧАСНА ТЕРАПІЯ (ОГЛЯД ЛІТЕРАТУРИ)

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HERPESVIRUS INFECTIONS: CLINICAL ASPECTS AND MODERN THERAPY (LITERATURE REVIEW)

***Анотація*.**

Герпесвірусні інфекції є однією з найпоширеніших груп вірусних захворювань людини, що характеризуються довічною персистенцією збудника та здатністю до реактивації. До родини Herpesviridae належать віруси простого герпесу, вірус вітряної віспи та оперізувального лишаю, цитомегаловірус, вірус Епштейна–Барр та інші, які мають широкий спектр клінічних проявів — від безсимптомного перебігу до тяжких системних уражень. Особливу небезпеку ці інфекції становлять для імуноскомпрометованих пацієнтів, новонароджених та вагітних. Сучасні молекулярно-генетичні методи значно покращили діагностику герпесвірусних інфекцій. Терапія базується на застосуванні противірусних препаратів, імунотерапії та профілактичних заходів. Водночас актуальними залишаються проблеми резистентності до противірусних засобів і розвитку побічних ефектів. У статті узагальнено сучасні дані щодо клінічних проявів, діагностики та лікування герпесвірусних інфекцій. Окрему увагу приділено новітнім терапевтичним підходам.

***Abstract*.**

Herpesvirus infections are among the most common viral diseases characterized by lifelong persistence and the ability to reactivate. The Herpesviridae family includes herpes simplex viruses, varicella-zoster virus, cytomegalovirus, Epstein–Barr virus, and others, which demonstrate a wide range of clinical manifestations from asymptomatic infection to severe systemic disease. These infections pose a significant risk to immunocompromised patients, neonates, and pregnant women. Modern molecular diagnostic techniques have significantly improved early detection. Treatment is based on antiviral therapy, immunomodulation, and preventive strategies, although drug resistance and adverse effects remain important challenges. This review summarizes current data on clinical features, diagnostics, and treatment of herpesvirus infections. Special attention is given to novel therapeutic approaches.

Ключові слова*: герпесвіруси, HSV, CMV, EBV, реактивація, противірусна терапія, імунітет.*
Key words*: herpesviruses, HSV, CMV, EBV, reactivation, antiviral therapy, immunity.*

Метою нашої наукової роботи було проаналізувати сучасні статті та літературні джерела, в яких висвітлювалась тематика патогенетичних механізмів, факторів ризику та принципи лікування герпесвірусних захворювань.

Матеріали і методи: ми провели огляд літератури на основі статей, опублікованих у базах даних PubMed за останні 10 років. Було проаналізовано актуальну інформацію про принципи лікування герпесвірусної інфекції.

Результати обговорення: Герпесвірусні інфекції є однією з найпоширеніших груп вірусних захворювань людини, що характеризуються довічною персистенцією вірусу в організмі після первинного інфікування та здатністю до періодичної реактивації. Родина Herpesviridae включає вісім вірусів, патогенних для людини, серед яких найбільш клінічно значущими є віруси простого герпесу 1 і 2 типів (HSV-1, HSV-2), вірус вітряної віспи та оперізувального лишаю (VZV), цитомегаловірус (CMV) та вірус Епштейна–Барр (EBV) [1]. Ці віруси мають складну структуру, містять дволанцюгову ДНК та характеризуються здатністю до латентного існування в клітинах господаря, що є ключовою причиною їх хронічного перебігу та рецидивів [2]. Після первинного зараження вірус зберігається у специфічних клітинних популяціях, уникаючи імунного контролю, що робить повну елімінацію інфекції практично неможливою [3].

Епідеміологічні дослідження свідчать про надзвичайно високий рівень інфікованості населення герпесвірусами у всьому світі. Серопозитивність до HSV-1 серед дорослого населення коливається в межах 60–90%, тоді як рівень інфікування CMV і EBV перевищує 80–95% [4].

Первинне інфікування найчастіше відбувається в дитячому або підлітковому віці, причому значна частина випадків перебігає безсимптомно або з мінімальними клінічними проявами, що ускладнює своєчасну діагностику [5]. Передача вірусів здійснюється різними шляхами: контактним, повітряно-крапельним, статевим, вертикальним та парентеральним, що забезпечує їх широке поширення в популяції [6]. Висока контагіозність і тривала персистенція сприяють формуванню значного резервуару інфекції серед населення.

Патогенез герпесвірусних інфекцій базується на складній взаємодії вірусу та імунної системи господаря. Після проникнення в організм вірус активно реплікується в клітинах-мішенях, після чого переходить у латентний стан, при якому його геном зберігається в клітинах без утворення інфекційних частинок [7]. Локалізація латентності залежить від типу вірусу: HSV персистує у нейронах сенсорних гангліїв, VZV — у дорсальних гангліях спинного мозку, EBV — у В-лімфоцитах, а CMV — у клітинах моноцитарно-макрофагальної системи [8]. У латентній фазі вірус здатний уникати імунного нагляду, що забезпечує його тривале виживання в організмі [9]. При впливі несприятливих факторів відбувається реактивація вірусу, що супроводжується переходом до літичної фази та розвитком клінічних проявів [10].

Фактори, що сприяють реактивації герпесвірусної інфекції, включають імуносупресію, хронічні захворювання, стрес, гормональні зміни, травми та вплив ультрафіолетового випромінювання [11]. Особливу роль відіграє порушення клітинного імунітету, зокрема зниження активності CD8+ Т-лімфоцитів та NK-клітин, які є основними ефекторами противірусного захисту [12]. У пацієнтів із імунодефіцитними станами реактивація вірусу може мати генералізований характер і призводити до тяжких уражень внутрішніх органів та центральної нервової системи [13].

The purpose of our scientific work was to analyze modern articles and literary sources, which covered the topic of pathogenetic mechanisms, risk factors and principles of treatment of herpesvirus diseases.

Materials and methods: we conducted a literature review based on articles published in PubMed databases over the past 10 years. Current information on the principles of treatment of herpes virus infection was analyzed.

Discussion results: Herpesvirus infections are one of the most common groups of human viral diseases, characterized by lifelong persistence of the virus in the body after primary infection and the ability to periodically reactivate. The Herpesviridae family includes eight viruses pathogenic to humans, among which the most clinically significant are herpes simplex viruses types 1 and 2 (HSV-1, HSV-2), varicella-zoster virus (VZV), cytomegalovirus (CMV), and Epstein-Barr virus (EBV) [1]. These viruses have a complex structure, contain double-stranded DNA and are characterized by the ability to exist latently in host cells, which is the key reason for their chronic course and relapses [2]. After primary infection, the virus persists in specific cell populations, avoiding immune control, which makes complete elimination of the infection almost impossible [3].

Epidemiological studies indicate an extremely high level of infection of the population with herpes viruses all over the world. HSV-1 seropositivity in the adult population varies between 60–90%, while CMV and EBV infection rates exceed 80–95% [4].Primary infection most often occurs in childhood or adolescence, and a significant part of cases is asymptomatic or with minimal clinical manifestations, which complicates timely diagnosis [5]. Viruses are transmitted in various ways: contact, airborne, sexual, vertical and parenteral, which ensures their widespread distribution in the population [6]. High contagiousness and long persistence contribute to the formation of a significant reservoir of infection among the population.

The pathogenesis of herpesvirus infections is based on the complex interaction between the virus and the host's immune system. After entering the body, the virus actively replicates in target cells, after which it enters a latent state, in which its genome is stored in cells without the formation of infectious particles [7]. The localization of latency depends on the type of virus: HSV persists in neurons of sensory ganglia, VZV in dorsal ganglia of the spinal cord, EBV in B-lymphocytes, and CMV in cells of the monocyte-macrophage system [8]. In the latent phase, the virus is able to avoid immune surveillance, which ensures its long-term survival in the body [9]. Under the influence of unfavorable factors, reactivation of the virus occurs, which is accompanied by the transition to the lytic phase and the development of clinical manifestations [10].

Factors contributing to reactivation of herpesvirus infection include immunosuppression, chronic disease, stress, hormonal changes, trauma, and exposure to ultraviolet radiation [11].A special role is played by a violation of cellular immunity, in particular, a decrease in the activity of CD8+ T-lymphocytes and NK-cells, which are the main effectors of antiviral protection [12]. In patients with immunodeficiency states, reactivation of the virus can be generalized and lead to severe damage to internal organs and the central nervous system [13].

An important component of the pathogenesis of herpesvirus infections is the complex interaction between the virus and the host's immune system, which determines both the effectiveness of primary infection control and the possibility of long-term persistence. The innate immune response, in particular the activation of type I interferons and natural killer (NK) cells, plays a key role in the early suppression of viral replication. In the future, adaptive immunity, represented by CD4+ and CD8+ T-lymphocytes, provides control of latent infection. At the same time, herpesviruses have numerous mechanisms of immune evasion, including inhibition of antigen presentation through MHC class I, inhibition of interferon signaling and modification of cytokine response, which allows them to avoid complete immune destruction and persist in the body for life.

Clinical manifestations of herpesvirus infections are extremely diverse and depend on the type of virus, the age of the patient, and the state of the immune system. Infections caused by HSV-1 usually present as orofacial herpes with characteristic vesicular eruptions on the lips and mucous membranes, whereas HSV-2 is associated with genital herpes, which tends to recur [14].

The varicella virus causes a primary infection in the form of varicella, which is characterized by a generalized rash, and upon reactivation causes shingles with a dermatomal location of the rash and severe pain syndrome [15].The Epstein–Barr virus is the causative agent of infectious mononucleosis, which is manifested by fever, lymphadenopathy, hepatosplenomegaly, and changes in peripheral blood, in particular, the appearance of atypical mononuclear cells [16]. In addition, EBV has oncogenic potential and is associated with the development of a number of malignancies, including Burkitt's lymphoma, Hodgkin's disease, and nasopharyngeal carcinoma [17]. Cytomegalovirus is usually asymptomatic in immunocompetent individuals, but can cause severe lesions such as pneumonia, retinitis, colitis, and encephalitis in neonates and immunocompromised patients [18].

Diagnosis of herpesvirus infections is based on a combination of clinical data and laboratory methods. The most sensitive and specific method is polymerase chain reaction, which allows detection of viral DNA and assessment of viral load, which is important for monitoring the course of the disease [19]. Serological methods are used to determine the patient's immune status and establish the fact of infection, although their diagnostic value may be limited in immunocompromised individuals.

Modern therapy of herpes virus infections is based on the use of antiviral drugs that suppress the replication of the virus, but do not ensure its complete elimination. The main drugs are nucleoside analogues such as acyclovir, valacyclovir and famciclovir, which are widely used to treat infections caused by HSV and VZV [20]. For CMV infection, ganciclovir and valganciclovir are used, especially in high-risk patients.An important direction of modern therapy is also the development of new antiviral agents and immunotherapeutic approaches aimed at increasing the effectiveness of treatment and reducing the risk of reactivation of the virus.

A significant problem of modern therapy of herpesvirus infections is the development of resistance to antiviral drugs, especially in patients with immunodeficiency states, transplant recipients and patients with long-term antiviral therapy. Most often, the mechanism of resistance is associated with mutations in viral thymidine kinase or DNA polymerase, which leads to reduced sensitivity to nucleoside analogs such as acyclovir and ganciclovir. In such cases, alternative drugs are used, in particular foscarnet and cidofovir, which act independently of viral thymidine kinase, but their use is limited by a high risk of nephrotoxicity. This emphasizes the need for an individualized approach to therapy and viral load monitoring.

A promising direction in the fight against herpesvirus infections is the development of vaccines and new immunological approaches to prevention and treatment. Despite significant progress in understanding viral biology, there are currently no licensed vaccines against HSV, prompting active research into recombinant subunit vaccines, DNA, and mRNA technologies. Vaccines aimed at inducing both humoral and cellular immune responses are also under development for cytomegalovirus and Epstein-Barr virus. In addition to vaccine prophylaxis, immunotherapy approaches, including monoclonal antibodies and genome-editing technologies such as CRISPR/Cas, which can potentially affect latent forms of infection, are promising.

Conclusion: Herpesvirus infections remain one of the most important problems of modern medicine due to their high prevalence, life-long persistence and risk of reactivation. The clinical spectrum of these infections is extremely wide — from asymptomatic carriers to severe generalized forms with damage to vital organs, especially in patients with impaired immunity. Modern diagnostic methods, in particular molecular genetic technologies, have significantly increased the possibilities of early detection and monitoring of the course of the disease. The basis of treatment is antiviral therapy, which allows controlling virus replication and reducing the frequency of relapses, but does not ensure complete elimination of the pathogen. Development of new antiviral drugs, overcoming drug resistance and introduction of immunotherapeutic approaches are promising directions. Further research in this area is necessary to improve the results of treatment and prevention of herpesvirus infections.

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ВІРУС ЕПШТЕЙНА–БАРР: РОЛЬ У ХРОНІЧНИХ ТА ОНКОЛОГІЧНИХ ПРОЦЕСАХ (ОГЛЯД ЛІТЕРАТУРИ)

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EPSTEIN–BARR VIRUS: ROLE IN CHRONIC AND ONCOLOGICAL PROCESSES (LITERATURE REVIEW)

Анотація.

Вірус Епштейна–Барр (EBV) є одним із найбільш поширених вірусів людини, що інфікує понад 90% дорослого населення у світі. Він належить до родини Herpesviridae та характеризується здатністю до довічної персистенції в організмі. Первинна інфекція зазвичай перебігає безсимптомно або у формі інфекційного мононуклеозу, однак у ряді випадків вірус асоціюється з розвитком хронічних патологічних станів. EBV має складні механізми імунної евазії, що дозволяють йому уникати контролю з боку імунної системи. Значну увагу приділяють його ролі в онкогенезі, зокрема у формуванні лімфопроліферативних захворювань та епітеліальних пухлин. Встановлено зв'язок EBV із лімфомою Беркітта, назофарингеальною карциномою та EBV-асоційованим раком шлунка. Хронічна активна EBV-інфекція може призводити до тяжких імунопатологічних уражень. У роботі узагальнено сучасні дані щодо патогенезу, клінічного значення та онкогенного потенціалу EBV.

Abstract.

Epstein–Barr virus (EBV) is one of the most prevalent human viruses, infecting more than 90% of the adult population worldwide. It belongs to the Herpesviridae family and is characterized by lifelong persistence in the host. Primary infection is usually asymptomatic or presents as infectious mononucleosis, but in some cases it is associated with chronic pathological conditions. EBV exhibits complex immune evasion mechanisms that allow it to escape host immune surveillance. Particular attention has been paid to its role in oncogenesis, including lymphoproliferative disorders and epithelial malignancies. EBV has been strongly associated with Burkitt lymphoma, nasopharyngeal carcinoma, and EBV-associated gastric cancer. Chronic active EBV infection may lead to severe immunopathological complications. This review summarizes current data on EBV pathogenesis, clinical significance, and oncogenic potential.

Ключові слова: *вірус Епштейна–Барр, EBV, онкогенез, хронічна інфекція, імунна евазія, лімфопроліферація.*

Key words: *Epstein–Barr virus, EBV, oncogenesis, chronic infection, immune evasion, lymphoproliferation.*

The purpose of our scientific work was to analyze modern articles and literary sources, which covered the topic of pathogenetic mechanisms, risk factors, and the role of the Epstein-Barr virus in chronic and oncological processes.

Materials and methods: we conducted a literature review based on articles published in PubMed databases over the past 10 years. Current information on the role of the Epstein-Barr virus in chronic and oncological processes was analyzed.

Discussion results: Epstein–Barr virus (EBV), or human herpesvirus type 4, is one of the most common human pathogens and belongs to the γ-herpesvirinae subfamily. According to modern epidemiological data, more than 90–95% of the world's adult population is infected with this virus, which indicates its global distribution and high contagiousness [1].

The main way of transmission is contact with the saliva of an infected person, which causes frequent infection in childhood and adolescence [2]. In countries with a high standard of living, the primary infection often manifests as infectious mononucleosis, while in young children it is usually asymptomatic [3].

After entering the body, EBV infects the epithelial cells of the oropharynx and B-lymphocytes using the CD21 receptor, which ensures its tropism to cells of the immune system [4]. An important biological feature of the virus is its ability for lifelong persistence, which is realized through latent infection in memory B cells [5]. In this state, the viral DNA is stored as an episome, which allows the virus to evade immune surveillance and maintain infection throughout a person's life.Pathogenesis of EBV infection includes two main phases — lytic and latent. In the lytic phase, active replication of the virus occurs with the formation of new virions, which contributes to the spread of infection in the body. Instead, the latent phase is characterized by limited expression of viral genes and the absence of production of viral particles [6]. There are several types of latency that differ in the spectrum of expression of viral proteins, including EBNA and LMP, which play a key role in cell transformation [7].

Mechanisms of immune evasion of EBV attract special attention. The virus is capable of modulating the immune response by reducing the expression of MHC molecules, inhibiting apoptosis, and influencing the production of cytokines [8]. In particular, the LMP1 protein functions as an oncogene, activating NF-κB signaling pathways, which promotes cell proliferation and survival [9]. These mechanisms allow the virus not only to avoid the immune response, but also to create conditions for the development of chronic pathological processes.

Current research is increasingly paying attention to the role of epigenetic mechanisms in the regulation of EBV-associated cell transformation. It was established that the virus is able to change the DNA methylation of the host cell, which leads to suppression of the expression of tumor suppressor genes and activation of oncogenic signaling pathways. In addition, EBV-induced changes in histone modifications contribute to the stabilization of the latent state of the virus and maintenance of the malignant phenotype of cells. These epigenetic rearrangements are considered as potential therapeutic targets for the development of new strategies for the treatment of EBV-associated neoplasms.

In most immunocompetent individuals, EBV is under the control of cytotoxic T-lymphocytes, but in immunodeficient states this control is disrupted [10]. This can lead to the development of chronic active EBV infection, which is characterized by long-term virus replication, systemic organ damage, and a high risk of death [11].

In addition, EBV is considered as a potential trigger of autoimmune diseases, including systemic lupus erythematosus and multiple sclerosis, which is associated with mechanisms of molecular mimicry and impaired immune tolerance [12].

Thus, EBV is a complex biological agent with unique properties of persistence and immune interaction, which determines its key role in the development of both chronic and oncological processes.

The oncogenic potential of the Epstein-Barr virus is one of the most significant among all known human viruses.According to current estimates, EBV is associated with approximately 1–2% of all malignant neoplasms in the world, which emphasizes its global importance in carcinogenesis [13]. The basis of the oncogenic effect of the virus is the ability to induce the proliferation of infected cells and inhibit apoptosis mechanisms through the expression of latent viral proteins such as EBNA1, EBNA2 and LMP1 [14].

One of the most studied EBV-associated tumors is Burkitt's lymphoma, which is particularly common in endemic regions of Africa. It is characterized by the translocation of the MYC gene, and EBV acts as a cofactor that contributes to the malignant transformation of B-lymphocytes [15].

Another important example is nasopharyngeal carcinoma, which is closely associated with latent EBV infection and has a high prevalence in Southeast Asian countries. In these tumors, viral proteins contribute to cell proliferation, angiogenesis, and suppression of the immune response [16].

EBV-associated gastric cancer deserves special attention, which accounts for about 10% of all gastric adenocarcinoma cases. In such tumors, the virus induces epigenetic changes, including hypermethylation of tumor suppressor genes, which contributes to carcinogenesis [17]. In addition, EBV plays an important role in the development of post-transplant lymphoproliferative disorders (PTLD), which occur in the background of immunosuppression and are characterized by uncontrolled proliferation of B cells [18].

The molecular mechanisms of EBV-induced oncogenesis include the activation of NF-κB, JAK/STAT, and PI3K/Akt signaling pathways, leading to cell cycle dysregulation and increased cell survival [19]. The virus is also able to affect the miRNA of the cell, changing the expression of genes involved in the control of growth and differentiation. These changes create a favorable environment for the development of malignant neoplasms.

Current approaches to the diagnosis of EBV infection include serological methods, determination of viral load using PCR, and immunohistochemical detection of viral antigens in tissues. The determination of antibodies to capsid antigen (VCA), nuclear antigen (EBNA) and early antigen (EA) is important, which allows differentiation of the stages of infection [20]. In clinical practice, determination of EBV-DNA in blood plasma is also used as a marker of infection activity and oncological processes.

Recent years have been characterized by the active implementation of liquid biopsy as a promising method of monitoring EBV-associated diseases. Determination of circulating viral DNA in blood plasma allows not only to diagnose an active infection, but also to assess the effectiveness of treatment and the risk of recurrence of the tumor process. It is especially important to use this method in nasopharyngeal carcinoma, where the level of EBV-DNA correlates with the stage of the disease and the prognosis of the patient. Thus, liquid biopsy becomes a key tool of personalized medicine.

Treatment of EBV-associated diseases remains a challenge.For most forms of infection, specific antiviral therapy is limited in its effectiveness, since the latent form of the virus is insensitive to antiviral drugs. In cases of cancer, standard treatments are used, including chemotherapy, radiation therapy, and immunotherapy. Development of vaccines against EBV and targeted therapy aimed at viral proteins are promising directions [13].

A promising direction in the therapy of EBV-associated pathologies is the use of immunotherapeutic approaches, in particular CAR-T cells and immune checkpoint inhibitors. These methods are aimed at restoring an effective cytotoxic response of T-lymphocytes against infected or transformed cells. Preliminary clinical studies demonstrate the potential effectiveness of such strategies in EBV-positive lymphomas, opening new opportunities for the treatment of patients with resistant forms of the disease.

Thus, the Epstein-Barr virus is an important etiological factor in the development of a wide range of oncological diseases, and its complex interactions with the immune system determine both the chronic course of the infection and its malignant potential.

Conclusion: Epstein–Barr virus is one of the key infectious agents that plays an important role in the development of both chronic and oncological processes in humans. Its ability to persist for life, complex mechanisms of immune evasion and influence on cellular signaling pathways lead to a wide range of clinical manifestations.EBV is associated with a number of malignancies, including lymphoproliferative diseases and epithelial tumors, supporting its importance as an oncogenic virus. Despite significant progress in the study of the pathogenesis of EBV infection, the issues of effective prevention and treatment remain relevant. Further research in this area may contribute to the development of new therapeutic approaches and improve the prognosis for patients.

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MATERNAL OBESITY AND PREGNANCY: A MODERN PERSPECTIVE

Abstract

Obesity is one of the leading global medical and social problems, with a steadily increasing prevalence, particularly among women of reproductive age. Maternal obesity is considered an important predictor of adverse pregnancy outcomes and is associated with an increased risk of gestational diabetes mellitus, preeclampsia, thromboembolic complications, preterm birth, fetal macrosomia, and operative delivery.

This article summarizes current scientific data on the pathophysiological mechanisms underlying the impact of obesity on pregnancy, including the roles of insulin resistance, chronic systemic inflammation, adipokine imbalance, oxidative stress, and endothelial dysfunction. Particular attention is paid to alterations in placental structure and function, including changes in mitochondrial activity, the development of a lipotoxic environment, and immune-inflammatory processes that contribute to placental insufficiency. The concept of fetal programming is discussed as a key mechanism underlying the development of long-term metabolic, cardiovascular, and neurocognitive disorders in offspring. In addition, recent evidence on the impact of maternal obesity on neonatal brain development, as well as the economic burden associated with the management of such pregnancies, is analyzed. The importance of preconception care, early identification of high-risk groups, and the implementation of multidisciplinary approaches to prevent complications is emphasized. The findings highlight the need for a comprehensive strategy for managing pregnant women with obesity in order to improve both perinatal and long-term outcomes for the mother and child.

Keywords: *obesity, pregnancy, placenta, insulin resistance, diabetes mellitus, preeclampsia.*

Introduction. Obesity is one of the most pressing medical and social problems of modern society, with a steadily increasing prevalence, particularly among women of reproductive age. In contemporary conditions, maternal obesity is considered not only a risk factor for individual pregnancy complications but also a complex multisystem condition that significantly alters the physiology of the gestational process [1].

Excess body weight before and during pregnancy is associated with a substantial increase in the incidence of obstetric and perinatal complications, including gestational diabetes mellitus, preeclampsia, gestational hypertension, thromboembolic events, preterm birth, and cesarean delivery. Moreover, it has been demonstrated that these risks are dose-dependent and increase proportionally with body mass index.

Particular concern arises from the fact that obesity is a key factor in the development of metabolic disturbances during pregnancy, including insulin resistance, dyslipidemia, and chronic systemic inflammation. These processes not only complicate the course of gestation but also lead to structural and functional changes in the placenta, impairing the adequate transport of oxygen and nutrients to the fetus [1–3].

In addition to immediate clinical consequences, maternal obesity has a significant impact on the long-term health of offspring. Within the framework of the fetal programming concept, it has been shown that an adverse intrauterine metabolic environment may predispose children to an increased risk of obesity, type 2 diabetes mellitus, cardiovascular diseases, and even neurocognitive disorders later in life [1, 5].

Furthermore, the problem is exacerbated by a substantial economic burden on healthcare systems, associated with a higher incidence of complications, prolonged hospitalization, and the need for specialized medical care.

Thus, maternal obesity represents a complex interdisciplinary problem that integrates clinical, pathophysiological, social, and economic aspects. This underscores the need for in-depth investigation of its impact on pregnancy and the development of effective strategies for prevention and management in this high-risk patient population.

Aim of the study. The aim of this study is to summarize current scientific data on the impact of obesity during pregnancy on the course of gestation, maternal and fetal condition, as well as to analyze the main pathophysiological mechanisms and potential approaches to the prevention of complications.

Presenting the main material. Recent studies confirm that obesity is an independent risk factor for the development of obstetric complications. According to clinical observations, women with obesity are significantly more likely to be diagnosed with preeclampsia, gestational hypertension, and placental dysfunction [2, 3]. It has also been demonstrated that an increase in body mass index is directly correlated with higher rates of cesarean delivery and preterm birth.

Recent scientific evidence emphasizes the role of obesity as a metabolic and inflammatory condition associated with insulin resistance, oxidative stress, and endothelial dysfunction. These mechanisms underlie the development of placental insufficiency and pregnancy complications. Furthermore, maternal obesity is considered a factor of "fetal programming," increasing the risk of metabolic and cardiovascular diseases in offspring later in life.

The prevalence of maternal obesity is increasing worldwide, approaching epidemic proportions, with approximately 10% of women with obesity suffering from diabetes mellitus, which is a significant risk factor for adverse pregnancy outcomes [1, 2].

Pregnant women with overweight and obesity prior to conception have a significantly higher risk of adverse pregnancy outcomes, including gestational diabetes and preeclampsia. The risk of preeclampsia is twice as high with a maternal body mass index (BMI) of 26 kg/m² and three times higher with a BMI > 30 kg/m² [3, 4].

Obesity is the strongest risk factor for the development of type 2 diabetes mellitus in non-pregnant individuals and gestational diabetes in pregnant women. Reduced insulin sensitivity during pregnancy leads not only to impaired glucose metabolism but also to lipid metabolism disturbances. Baseline concentrations of triglycerides and cholesterol increase two- to threefold as pregnancy progresses [5, 6].

Both pregestational and gestational diabetes are known to be associated with adverse maternal and fetal outcomes, including congenital anomalies and perinatal mortality [3].

Obesity during pregnancy is a complex multifactorial condition affecting all stages of the gestational process. It is characterized by disturbances in metabolic homeostasis, including insulin resistance, hyperlipidemia, and chronic systemic inflammation. These changes contribute to endothelial dysfunction, leading to the development of hypertensive disorders of pregnancy.

The study by Mandò C. et al. (2018) examined the impact of maternal obesity and hyperglycemia on placental mitochondrial function, which plays a key role in energy metabolism during pregnancy. It was shown that obesity leads to the formation of a lipotoxic placental environment, characterized by increased inflammation and oxidative stress, which in turn impairs mitochondrial function and promotes excessive production of reactive oxygen species. The authors found that in women with obesity without gestational diabetes, there is a compensatory increase in mitochondrial DNA content, indicating enhanced mitochondrial biogenesis. In contrast, the combination of obesity and hyperglycemia is associated with structural mitochondrial damage and reduced functional efficiency. Thus, maternal metabolic disturbances can induce diverse alterations in placental energy metabolism, potentially negatively affecting pregnancy outcomes and long-term offspring health [1].

The study by Layden A. J. et al. (2023) analyzed the association between prepregnancy obesity and the risk of histological placental inflammation at term, taking into account potential selection bias. The authors demonstrated that maternal obesity is an important factor associated with an increased likelihood of placental inflammation, which in turn is linked to adverse neonatal outcomes. At the same time, it was emphasized that the assessment of this association may be substantially distorted due to methodological features of placental sampling, necessitating the use of more robust statistical approaches to minimize bias. Thus, the findings confirm the role of maternal metabolic status in the development of immune-inflammatory changes in the placenta and highlight the need for careful interpretation of epidemiological data in this field [7].

It has been shown that newborns of mothers with obesity have an increased risk of both neonatal morbidity and long-term adverse outcomes associated with an altered intrauterine metabolic environment.

Obesity in early pregnancy contributes to an increased risk of obesity and metabolic syndrome in offspring, regardless of birth weight and the presence of gestational diabetes in the mother [3]. Women with overweight and obesity also have a higher risk of spontaneous miscarriage. It has been reported that women with a body mass index (BMI) ≥25 have approximately a 20% higher risk of miscarriage compared to women with normal body weight [8].

Maternal obesity has also been identified as a risk factor for congenital anomalies in the fetus, including spina bifida, neural tube defects, limb reduction defects, cardiovascular anomalies, and cleft lip and palate [8].

Catalano P. M. et al. (2015, 2017) provided a comprehensive overview of current concepts regarding the pathophysiological impact of maternal obesity on pregnancy outcomes and maternal and fetal health. The authors emphasized that obesity is one of the most common metabolic disorders among women of reproductive age and is associated with a wide range of complications, including gestational diabetes, preeclampsia, fetal macrosomia, and an increased risk of operative delivery. Key mechanisms underlying these conditions include chronic systemic inflammation, insulin resistance, adipokine imbalance, and placental dysfunction, which together create an unfavorable intrauterine environment. An important aspect is the long-term impact: metabolic alterations during intrauterine development contribute to the "programming" of obesity, type 2 diabetes mellitus, and cardiovascular diseases in offspring. Thus, the authors substantiate the need for early prevention and correction of obesity at the preconception stage as a key strategy to improve both perinatal and long-term outcomes [8, 11].

The study by Solmi F. and Morris S. (2018) examined the impact of prepregnancy body mass index (BMI) on the economic costs associated with childbirth using a large population-based sample of women. The authors found that overweight and obesity are associated with a statistically significant increase in the cost of medical care during childbirth compared to women with normal BMI. In particular, costs increase proportionally with the degree of obesity, ranging from a modest increase in overweight women to a substantial rise in those with severe obesity. The key factors contributing to these increased costs include higher rates of operative delivery, preterm birth, and prolonged hospitalization.

Thus, these findings demonstrate that maternal obesity has not only clinical but also significant economic implications for healthcare systems, highlighting the importance of prevention and weight management at the preconception stage [9].

The study by Na X. et al. (2021), published in the *American Journal of Neuroradiology*, investigated the impact of maternal obesity during pregnancy on neonatal brain structural development using advanced MRI neuroimaging techniques. It was found that maternal obesity is associated with reduced cortical thickness in newborns, particularly in the frontal regions, which play a key role in language development, cognitive control, and executive functions.

These findings suggest that the adverse intrauterine metabolic environment may exert its effects as early as the initial stages of postnatal life through impaired neurogenesis and cortical maturation. Thus, the authors emphasize that maternal obesity is an important factor in early "fetal programming" of brain structural changes, which may potentially influence subsequent neurocognitive and behavioral outcomes in offspring [10].

Conclusion. Maternal obesity is a significant risk factor for adverse pregnancy outcomes and perinatal complications, including gestational diabetes mellitus, preeclampsia, and preterm birth. These conditions are driven by underlying mechanisms such as insulin resistance, chronic inflammation, oxidative stress, and endothelial dysfunction, which contribute to the development of placental insufficiency.

Maternal obesity also affects the intrauterine environment and is associated with long-term metabolic and neurocognitive disorders in offspring.

Prevention and management of excess body weight at the preconception stage, early identification of high-risk groups, and a multidisciplinary approach to the management of pregnant women are essential strategies for reducing complication rates and improving perinatal outcomes.

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ДІАГНОСТИКА ТА ЛІКУВАННЯ ТЕЛА: ОГЛЯД ЗАГАЛЬНИХ РЕКОМЕНДАЦІЙ ТА ІНДИВІДУАЛЬНІ СТРАТИФІКАЦІЇ РИЗИКУ (ОГЛЯД ЛІТЕРАТУРИ)

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DIAGNOSIS AND TREATMENT OF THE BODY: A REVIEW OF GENERAL RECOMMENDATIONS AND INDIVIDUAL RISK STRATIFICATIONS (LITERATURE REVIEW)

Анотація:

Тромбоемболія легеневої артерії (ТЕЛА) належить до провідних серцево-судинних патологій, яка щорічно уражає понад 35 осіб на 100 000 населення. Згідно з епідеміологічними даними, близько 5% пацієнтів із цим діагнозом демонструють стійку гіпотензію, прояви кардіогенного шоку або навіть зупинку серця, що зумовлено гострою правошлуночковою (ПШ) недостатністю. Ці стани класифікуються як ТЕЛА високого ризику, оскільки вони характеризуються надзвичайно високим рівнем летальності. У найбільш тяжких випадках прогресуюче розтягнення правого шлуночка та зниження його скоротливої здатності можуть спричинити порушення діастолічного наповнення лівого шлуночка (ЛШ), що супроводжується системною гіпоперфузією. Такий стан додатково ускладнюється гіпоксемією, посилюючи тяжкість захворювання [1].

Сучасні підходи до ведення таких пацієнтів базуються на двох взаємопов'язаних концептуальних засадах: швидкому підтвердженні або виключенні діагнозу та негайній стратифікації ризику. Остання визначає ключові аспекти подальшого лікування, включаючи вибір місця госпіталізації, рівень необхідного моніторингу, а також стратегії терапії, що можуть включати антикоагулянтну терапію, реперфузійні втручання або комбінований підхід. Через це тромбоемболія легеневої артерії (ТЕЛА) сьогодні розглядається не як єдина нозологічна одиниця, а скоріше як сукупність клінічних станів, що суттєво різняться за рівнями короткострокової смертності та ризиками розвитку гемодинамічної нестабільності [2].

Abstract:

Pulmonary embolism (PE) is one of the leading cardiovascular pathologies, affecting more than 35 people per 100,000 population annually. According to epidemiological data, about 5% of patients with this diagnosis demonstrate persistent hypotension, manifestations of cardiogenic shock or even cardiac arrest, which is caused by acute right ventricular (RV) failure. These conditions are classified as high-risk PE, as they are characterized by an extremely high mortality rate. In the most severe cases, progressive right ventricular distension and a decrease in its contractile capacity can cause impaired diastolic filling of the left ventricular (LV), accompanied by systemic hypoperfusion. This condition is further complicated by hypoxemia, increasing the severity of the disease [1].

Current approaches to the management of such patients are based on two interrelated conceptual foundations: rapid confirmation or exclusion of the diagnosis and immediate risk stratification. The latter determines key aspects of further management, including the choice of hospital location, the level of monitoring required, and treatment strategies that may include anticoagulation, reperfusion interventions, or a combined approach. As a result, pulmonary embolism (PE) is now considered not as a single nosological entity, but rather as a set of clinical conditions that differ significantly in terms of short-term mortality and risks of hemodynamic instability [2].

Ключові слова: *тромбоемболія легеневої артерії, діагностика, стратифікація ризику, правошлуночкова дисфункція, Д-димер, антикоагулянтна терапія, тромболізис, катетерні втручання.*

Key words: *Pulmonary embolism, diagnosis, risk stratification, right ventricular dysfunction, D-dimer, anticoagulant therapy, thrombolysis, catheter interventions.*

Мета: узагальнити сучасні зарубіжні данеі 2021–2026 років щодо діагностики та лікування ТЕЛА з акцентом на загальні рекомендації та індивідуальну стратифікацію ризику, а також критичний аналіз тих клінічних зон, де стандартизовані алгоритми потребують персоналізованого тлумачення.

Матеріали та методи: Робота виконана як огляд літератури з баз даних PubMed, Scopus та Web of Science. До аналізу включено сучасні огляди діагностичних підходів, порівняльні праці щодо міжнародних рекомендацій, узагальнення доказів із антитромботичної терапії, публікації щодо високоризикової та проміжноризикової ТЕЛА, а також матеріали новітньої спільної американської настанови 2026 року. Особливу увагу приділено питанням клінічної імовірності, ролі Д-димеру, візуалізаційних критеріїв правошлуночкового перевантаження, індивідуалізації реперфузійної терапії та тривалості антикоагулянтного лікування.

Результати та обговорення: Останні дослідження демонструють, що рівень смертності від тромбоемболії легеневої артерії (ТЕЛА) неухильно зростає впродовж останнього десятиліття, попри значні досягнення в технологіях медичної допомоги та запровадження нових підходів до лікування цього захворювання, зокрема створення мультидисциплінарних команд реагування на тромбоемболію легеневої артерії [3]. Нинішні методології оцінки ризику, рекомендовані Європейським товариством кардіологів та Американською асоціацією серця, спираються на показники системної гіпотензії або дисфункції правого шлуночка. Пацієнтів із високим ризиком визначають за такими характеристиками: стійкий систолічний артеріальний тиск менше 90 мм рт. ст., тривале зниження систолічного тиску більш ніж на 40 мм рт. ст., необхідність у вазопресорах або випадки серцевої зупинки [4].

Ця категорія хворих належить до найуразливіших з огляду на рівень смертності. Короткострокові показники летальності в таких пацієнтів, сягали 30–50%. Незважаючи на це, група високого ризику залишається дослідженою недостатньо [5].

У сучасному підході до діагностики тромбоемболії легеневої артерії (ТЕЛА) перший крок полягає не у візуалізаційних дослідженнях, а в оцінці попередньої клінічної імовірності. На цьому етапі застосовуються валідовані інструменти, зокрема шкала Веллса або Женевська шкала. Вони дозволяють класифікувати пацієнтів за рівнем ризику (низька, проміжна або висока ймовірність) і обрати правильний алгоритм подальшої діагностики [6]. Висновки міжнародних рекомендацій, зібрані у роботі Zuin, M, Bikdeli, B, наголошують, що більшість сучасних протоколів рекомендують поєднувати оцінку клінічної імовірності з аналізом рівня Д-димеру у пацієнтів із низьким або проміжним ризиком. У випадках із високою ймовірністю патології візуалізаційні методи мають використовуватися без затримок [7].

Д-димер відіграє ключову роль саме при низькій та проміжній клінічній імовірності. Сучасні стандарти дозволяють використовувати віково-скориговані порогові значення або ймовірнісно-адаптовані підходи, що знижує кількість непотрібних променевих обстежень, не жертвуючи безпекою пацієнта [8]. За узагальненими рекомендаціями Американського коледжу кардіології 2024 року, у випадках низької попередньої імовірності можна застосовувати критерії клінічного виключення [7]. Водночас у настановах, які планують оприлюднити в США у 2026 році, рекомендовано обов'язкове визначення рівня Д-димеру для пацієнтів із низькою або проміжною ймовірністю ТЕЛА. Якщо результат знаходиться у межах норми, наявність гострої ТЕЛА вважається малоймовірною [9].

Комп'ютерна томографічна ангіографія легеневих артерій залишається провідним методом підтвердження діагнозу в більшості клінічних ситуацій, що обґрунтовується її високою діагностичною точністю та доступністю [10]. Згідно з міжнародними рекомендаціями, узгодженими у дослідженні Зуїна зі співавторами, цей метод розглядається як перша лінія діагностики для більшості пацієнтів. Альтернативним підходом є вентиляційно-перфузійна сцинтиграфія, яка здебільшого використовується у разі наявності протипоказань до проведення дослідження із контрастуванням, за умови можливості експертного аналізу результатів або в специфічних клінічних ситуаціях, наприклад, у випадках вагітності [11]. Настанова Американської асоціації від 2026 року також формулює комп'ютерну томографічну ангіографію як стандартний метод візуалізації, тоді як сцинтиграфія визначається як відповідна альтернатива для пацієнтів, яким контрастна томографія протипоказана [9,12].

Діагностичний підхід до оцінки гострої тромбоемболії легеневої артерії (ТЕЛА) у пацієнтів із гемодинамічною нестабільністю має свої особливості. Як зазначено у систематичному огляді Otero-Candelera R., Elías-Hernández T 2024 року, трансторакальна ехокардіографія не є рекомендованим методом у стабільних пацієнтів із підозрою на ТЕЛА, однак вона набуває ключового значення у випадках нестабільності, коли транспортування хворого на комп'ютерну томографію представляє значний ризик або є фізично неможливим. Виявлення ехокардіографічних ознак гострого перевантаження правого шлуночка дозволяє оперативно ухвалювати рішення щодо застосування невідкладної реперфузійної терапії. [13]

Після встановлення діагнозу центральним етапом ведення пацієнтів з ТЕЛА стає стратифікація ризику ранньої смертності та прогресуючого погіршення гемодинамічних показників. Сучасні міжнародні рекомендації ґрунтуються на інтеграції клінічних прогнозних індексів із маркерами дисфункції правого шлуночка та біохімічними показниками пошкодження міокарда [14]. Серед найбільш поширених інструментів оцінки ризику виділяють індекс тяжкості легеневої емболії та його спрощену версію, які дозволяють ефективно ідентифікувати пацієнтів низького ризику для визначення можливих стратегій лікування, таких як рання виписка або амбулаторне ведення. Європейський підхід до стратифікації ризику додатково включає дані візуалізаційної діагностики та лабораторні маркери перевантаження правого шлуночка, що забезпечує більш детальну і всебічну оцінку стану пацієнта [15].

У практичному підході до класифікації пацієнтів з тромбоемболією легеневої артерії (ТЕЛА) виділяють щонайменше три основні групи ризику: низький, проміжний і високий. До високого ризику належать пацієнти з артеріальною гіпотензією, потребою у вазопресорах, станом шоку або зупинкою кровообігу. Проміжна група включає гемодинамічно стабільних хворих, у яких спостерігаються ознаки перевантаження правого шлуночка та/або підвищення рівня кардіальних біомаркерів. Згідно із сучасними європейськими підходами, ця група додатково розділяється на підтипи – проміжно-низький та проміжно-високий ризик, залежно від поєднання вказаних ознак. Саме для цієї категорії пацієнтів вибір оптимальної інтенсивності лікування становить найбільшу складність [16].

Антикоагулянтна терапія є основою лікування ТЕЛА у всіх групах ризику, якщо немає абсолютних протипоказань. Сучасні рекомендації, зокрема дослідження, проведене Zuin, M, Bikdeli, B, а також останні американські настанови акцентують увагу на тому, що базове лікування підтвердженої ТЕЛА починається саме з антикоагуляції. Більше того, якщо ймовірність діагнозу розцінюється як проміжна або висока, а ризик кровотеч мінімальний, більшість алгоритмів передбачають можливість розпочати емпіричну терапевтичну антикоагуляцію ще до остаточного підтвердження діагнозу [7,17].

У випадку гемодинамічно стабільних пацієнтів пріоритет надається прямим пероральним антикоагулянтам (ППАК), оскільки вони демонструють високу ефективність і мають кращий безпековий профіль щодо великих кровотеч у порівнянні з антагоністами вітаміну К. Американська настанова 2026 року прямо рекомендує використовувати ППАК замість антагоністів вітаміну К у відповідних категоріях хворих. Однак для вагітних пацієнток віддається перевага низькомолекулярному або нефракціонованому гепарину. Аналіз міжнародних рекомендацій також узгоджує той факт, що мінімальна тривалість терапевтичної антикоагуляції повинна становити не менше трьох місяців, що визнається практично всіма провідними гайдлайнами [9,18].

Реперфузійна терапія відіграє ключову роль у менеджменті пацієнтів із високим ризиком. Міжнародні клінічні настанови одностайно рекомендують застосування системного тромболізису як основного терапевтичного підходу у випадках шоку чи тривалої гемодинамічної нестабільності, за умови, що ризик кровотечі не перевищує допустимі межі. У разі протипоказань до тромболізису або його недостатньої ефективності доцільно розглядати альтернативні методи, такі як катетерні втручання чи хірургічна емболектомія. Акцент також робиться на важливості прийняття рішень у межах мультидисциплінарних команд, особливо в закладах зі спеціалізованими групами реагування на легеневу емболію [19].

Згідно з великим аналізом реєстру мультидисциплінарних команд, проведеного Kobayashi, T., Pugliese, S у 2024 році, пацієнти з високим ризиком, особливо ті, які зазнали гемодинамічного колапсу, характеризуються надзвичайно високими показниками внутрішньолікарняної летальності та частоти ускладнень. Ця інформація підкреслює багатовимірне значення стратифікації ризику при легеневій емболії, яка визначає не лише прогностичні аспекти, але й організаційні вимоги щодо переведення пацієнта до спеціалізованих центрів, застосування інтервенційних методів лікування та проведення інтенсивної терапії [20].

Висновок: Сучасна діагностика та лікування ТЕЛА ґрунтуються на чіткій послідовності: оцінка клінічної імовірності, раціональне використання Д-димеру, своєчасна візуалізація та негайна стратифікація ризику. Базові рекомендації різних міжнародних товариств у цих пунктах значною мірою узгоджені, однак ключові клінічні труднощі виникають тоді, коли необхідно перейти від загального алгоритму до індивідуального рішення щодо інтенсивності терапії, амбулаторного ведення, реперфузійного втручання та тривалості антикоагуляції.

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САЛЬМОНЕЛЬОЗ У СУЧАСНІЙ КЛІНІЧНІЙ ПРАКТИЦІ: ОГЛЯД ЛІТЕРАТУРИ

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SALMONELLOSIS IN CONTEMPORARY CLINICAL PRACTICE: A LITERATURE REVIEW

Анотація:
Сальмонельоз зберігає значення однієї з провідних бактеріальних кишкових інфекцій, актуальність якої посилюється циркуляцією нетифоїдних сероварів, ризиком інвазивних форм у вразливих груп населення та зростанням антибіотикорезистентності.

***Мета роботи** - узагальнити сучасні літературні дані 2023-2025 рр. щодо епідеміологічних тенденцій, клінічних проявів, факторів ризику тяжкого перебігу, діагностики, лікувальної тактики, проблемі антибіотикорезистентності та профілактики сальмонельозу.*

Abstract:
Salmonellosis remains one of the leading bacterial intestinal infections and continues to be clinically relevant because of the circulation of non-typhoidal serovars, the risk of invasive disease in vulnerable groups, and increasing antimicrobial resistance. The analysis showed that modern clinical practice should rely on a risk-oriented approach: most cases present as self-limited gastroenteritis, whereas infants, young children, older adults, and immunocompromised patients are at higher risk of dehydration, bacteremia, and septic complications. Appropriate management requires bacteriological confirmation, assessment of serovar distribution and antimicrobial susceptibility, early identification of severe disease, and justified use of antibacterial therapy. Salmonellosis should therefore be regarded not merely as a foodborne infection, but as a multifactorial clinical and public health challenge that requires vigilance, laboratory support, antimicrobial stewardship, and prevention within a One Health framework.

***The purpose** of the work is to summarize the current literature data of 2023-2025 regarding epidemiological trends, clinical manifestations, risk factors for a severe course, diagnosis, treatment tactics, the problem of antibiotic resistance and prevention of salmonellosis.*

***Ключові слова:** сальмонельоз, нетифоїдні сальмонели, антибіотикорезистентність, діти, гастроентерит, клінічна практика.*

***Keywords:** salmonellosis, non-typhoidal Salmonella, antimicrobial resistance, children, gastroenteritis, clinical practice.*

Матеріали та методи. Проведено огляд сучасних відкритих наукових джерел 2023-2025 рр., що висвітлюють клінічні, епідеміологічні та профілактичні аспекти сальмонельозу. До аналізу включено статті й огляди, доступні у відкритому доступі, з перевагою українським публікаціям та роботам авторів Буковинського державного медичного університету.

Materials and methods. A review of modern open scientific sources for 2023-2025 covering clinical, epidemiological and preventive aspects of salmonellosis was conducted. Articles and reviews available in the public domain are included in the analysis, with preference given to Ukrainian publications and works by the authors of the Bukovinian State Medical University.

Introduction. Salmonellosis remains one of the most important acute bacterial intestinal infections, which has not only infectological, but also significant public and sanitary significance. In modern reviews, it is considered as a leading zoonotic food pathogen capable of causing relatively mild self-limited gastroenteritis, but under certain conditions - invasive forms with bacteremia and sepsis. S. Enteritidis and S. Typhimurium remain the main serovars of epidemic importance, and infection control is increasingly linked to a One Health approach that integrates clinical, veterinary and nutritional aspects of prevention [2].

The main part. Summarizing the current literature shows that the clinical significance of salmonellosis is determined by a combination of three circumstances: the wide circulation of the pathogen in the food chain, the high frequency of nontyphoid serovars, and the ability of the infection to take a severe course in vulnerable patients. According to modern reviews, Salmonella has more than 2,500 serovars, is transmitted mainly through contaminated products of animal origin, water or contact with animals, and the clinical manifestations and consequences of infection depend on the serovar and the state of the macroorganism. Primary symptoms most often include diarrhea, abdominal pain, fever, nausea, and vomiting; in the typical course, they last from several days to one week, however, in young children and people with reduced immunity, progression to systemic lesions is possible [2, 3].

For Ukraine, the problem remains of practical relevance. In the domestic study of the epidemic process, it was established that salmonellosis was registered at a fairly high level in the Zaporizhzhia region in 2018-2022, and intensive morbidity rates among children exceeded similar rates among adults by 4-7 times; an additional threat was the circulation of strains resistant to cephalosporins, ampicillin and fluoroquinolones. Newer clinical observations by the authors of BSMU also emphasize pediatric vulnerability: in 2024, the incidence of salmonellosis among children in Ukraine increased by 6%, and children accounted for 40% of all cases of intestinal infections [1,6].

Risk groups need special attention. In modern foreign sources, they include children under 5 years of age, the elderly, and immunocompromised patients; it is in these categories that dehydration, bacteremia, meningitis and other serious complications occur more often. In 2025, it was emphasized that non-typhoidal Salmonella ceased to be perceived only as a cause of "ordinary food poisoning": the increasing frequency of cases among vulnerable contingents and the risk of fatal consequences in conditions of limited access to medical care make the infection an important clinical problem [3, 5].

Pediatric features of the course are of direct importance to the doctor. According to the BSMU, under modern conditions, 70% of cases of hospitalized salmonellosis in children were caused by S. Enteritidis, while S. Typhimurium was more often isolated in the younger age group. In children over 3 years of age, severe abdominal pain, repeated vomiting, and a severe condition at the time of hospitalization were more likely to be noted, and in younger children, longer vomiting, which made it difficult to carry out oral rehydration. Such differences indicate the need for a differentiated clinical assessment already at the initial stage of providing care [6].

Table 1

Clinical guidelines for managing a patient with salmonellosis in modern practice

Clinical aspect	Modern data	Practical significance
Leading causative agents	Non-typhoid serovars S. Enteritidis and S. Typhimurium have the greatest clinical significance; in children, their distribution may differ by age.	The probable serovar should be taken into account when assessing the risk of a severe course.
Typical course	Gastroenteritis with diarrhea, fever, nausea, vomiting and abdominal pain lasting 2-7 days is most often observed.	Most cases require careful assessment of the degree of dehydration and dynamic monitoring.
Risk groups	Young children, the elderly and immunocompromised patients are the most vulnerable.	In these patients, invasive forms and complications should be ruled out earlier.
Diagnosis	Bacteriological confirmation remains basic; serotyping and molecular methods are important for epidemic surveillance.	Laboratory verification helps clarify the etiology and the choice of antibacterial tactics.
Antibiotic resistance	Resistance is associated with efflux pumps, enzymatic inactivation, target switching, biofilms and plasmid mechanisms.	Empiric therapy should be combined with assessment of local sensitivity profiles.

Note. Compiled according to data [2, 3, 4, 6].

In terms of diagnostics, modern practice requires a combination of clinical analysis with timely bacteriological verification. The selection of Salmonella spp. from clinical material remains the basic criterion for case confirmation, and serotyping and molecular methods, in particular PFGE, MLVA and WGS, play an increasingly important role in outbreaks and tracing the source of infection. This approach allows not only to confirm the diagnosis, but also to specify the epidemiological origin of the case, which is especially important in the conditions of an outbreak [2, 6].

Antibiotic resistance is a separate challenge of modern clinical practice. According to modern reviews, for severe or complicated forms, antibacterial therapy is used, taking into account the risk group and the clinical situation; at the same time, due to the spread of resistance to fluoroquinolones, the role of ceftriaxone and azithromycin as empiric options is increasingly being discussed. At the same time, the pathogen has formed a complex of defense mechanisms: enzymatic inactivation of drugs, active removal of antibiotics from the cell, modification of targets, reduction of the permeability of the outer membrane, biofilm formation, and plasmid-mediated transfer of resistance. Therefore, the decision regarding antibacterial therapy cannot be templated and should be based on the assessment of the severity of the course, the patient's age, the presence of immunodeficiency and local data on sensitivity [3, 4].

Results and discussion. The conducted review allows us to formulate several practically significant conclusions.First, salmonellosis in the modern clinic should be considered as an infection with a highly variable course: from short-term gastroenteritis to invasive and septic forms. Secondly, for Ukraine, the pediatric component is of particular importance, since children form the most vulnerable contingent both in terms of morbidity and severe course. Third, epidemiological monitoring and clinical tactics are increasingly closely related to the problem of antibiotic resistance, which forces a shift from empiric standard treatment to a more personalized approach. Finally, the effective control of salmonellosis goes beyond only the clinical management of the patient, as it includes food safety, sanitary control, intersectoral supervision and educational work with the population [1, 2, 5].

Thus, modern clinical practice regarding salmonellosis should be based on early identification of patients at risk of a severe course, verification of the diagnosis by laboratory methods, sound antimicrobial tactics and preventive measures within the One Health concept. This model makes it possible to simultaneously reduce clinical risks for the patient and prevent the spread of resistant strains in the population [2, 4, 5].

Conclusions. 1. Salmonellosis remains an actual bacterial intestinal infection with the predominance of non-typhoid serovars S. Enteritidis and S. Typhimurium and a significant role of the food route of transmission.

2. Young children, the elderly, and immunocompromised patients are the most vulnerable to a severe course, in whom dehydration, bacteremia, and septic complications occur more often.

3. For modern clinical practice, bacteriological verification of the diagnosis, assessment of serovar and antibiotic sensitivity, as well as early detection of signs of an invasive course are key.

4. Increasing antibiotic resistance of Salmonella requires a careful and individualized approach to antibacterial therapy.

5. Effective containment of salmonellosis is possible only with a combination of clinical vigilance, epidemiological surveillance, food safety and prevention in the One Health format.

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КЛИНИКО-ЛАБОРАТОРНЫЕ ОСОБЕННОСТИ ХРОНИЧЕСКОГО ТОНЗИЛЛИТА У ДЕТЕЙ ПРИ РЕВМАТИЧЕСКОЙ БОЛЕЗНИ

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CLINICAL AND LABORATORY FEATURES OF CHRONIC TONSILLITIS IN CHILDREN WITH RHEUMATIC DISEASE

Аннотация.

В работе представлены результаты клинико-лабораторного исследования хронического тонзиллита у детей при наличии ревматической болезни. Обследованы 104 пациента в возрасте от 3 до 18 лет, разделённые на группы с изолированным хроническим тонзиллитом и с коморбидной ревматической патологией. Проведён комплексный анализ клинического течения заболевания, частоты обострений, форм тонзиллита, а также лабораторных показателей воспалительной активности. Установлено, что в структуре заболевания преобладают токсико-аллергические формы, преимущественно II степени, а также среднетяжёлые и тяжёлые варианты течения. Выявлено, что у детей с сопутствующей ревматической болезнью отмечается достоверное повышение уровня лейкоцитов, скорости оседания эритроцитов, C-реактивного белка и ревматоидного фактора, что свидетельствует о выраженной системной воспалительной и аутоиммунной активности. Показано, что коморбидность усугубляет клиническое течение хронического тонзиллита, повышает частоту рецидивов и риск осложнений. Полученные данные обосновывают необходимость ранней диагностики, углублённого лабораторного мониторинга и междисциплинарного подхода к лечению данной категории пациентов.

Abstract.

This paper presents the results of a clinical and laboratory study of chronic tonsillitis in children with rheumatic disease. A total of 104 patients aged 3 to 18 years were examined, divided into groups with isolated chronic tonsillitis and with comorbid rheumatic pathology. A comprehensive analysis of the clinical course of the disease, the frequency of exacerbations, the types of tonsillitis, and laboratory parameters of inflammatory activity was conducted. It was established that toxic-allergic forms, primarily stage II, predominate in the disease structure, as well as moderate and severe variants. It was found that children with concomitant rheumatic disease exhibit significantly elevated white blood cell counts, erythrocyte sedimentation rate, C-reactive protein, and rheumatoid factor, indicating pronounced systemic inflammatory and autoimmune activity. Comorbidity has been shown to worsen the clinical course of chronic tonsillitis, increasing the frequency of relapses and the risk of complications. These findings support the need for early diagnosis, in-depth laboratory monitoring, and a multidisciplinary approach to treatment in this patient population.

Ключевые слова: *хронический тонзиллит, дети, ревматическая болезнь, коморбидность, воспалительные маркеры, C-реактивный белок, ревматоидный фактор, токсико-аллергическая форма, иммуновоспалительный процесс.*

Keywords*: chronic tonsillitis, children, rheumatic disease, comorbidity, inflammatory markers, C-reactive protein, rheumatoid factor, toxic-allergic form, immune-mediated inflammation.*

Актуальность. Несмотря на достигнутые успехи в изучении этиопатогенетических механизмов, клинических проявлений и методов терапии, хронические воспалительные заболевания лимфоидного кольца глотки по-прежнему занимают одно из ведущих мест в структуре патологии ЛОР-органов. При этом их распространённость не демонстрирует тенденции к снижению, что указывает на сохраняющуюся высокую медико-социальную значимость данной группы заболеваний [5, 11, 13].

Хронический тонзиллит у детей продолжает оставаться одной из наиболее распространённых патологий ЛОР-органов и представляет значимую медико-социальную проблему, особенно при наличии коморбидных состояний. В последние годы особое внимание уделяется его роли как хронического очага инфекции, способного индуцировать и поддерживать системные иммуновоспалительные реакции [2, 8, 10, 12]. В условиях детского организма, характеризующегося функциональной незрелостью иммунной системы, персистенция инфекционного агента в небных миндалинах может приводить к формированию патологических иммунных ответов, включая аутоиммунные механизмы [1, 7, 9]. Это особенно актуально в контексте развития и прогрессирования ревматических заболеваний, где инфекционный триггер играет ключевую роль.

Коморбидность хронического тонзиллита с ревматическими заболеваниями у детей усугубляет клиническое течение обеих патологий, способствуя более частым обострениям, системным осложнениям и снижению качества жизни пациентов. Стрептококковая инфекция, являющаяся одним из ведущих этиологических факторов хронического тонзиллита, рассматривается как значимый пусковой механизм ревматического процесса, включая поражение сердца, суставов и соединительной ткани [3, 4, 6]. Несмотря на значительные достижения в диагностике и лечении, вопросы своевременной верификации очага инфекции, оценки его роли в патогенезе ревматических заболеваний и оптимизации терапевтической тактики остаются недостаточно изученными, что определяет высокую актуальность дальнейших исследований в данном направлении.

Целью настоящего исследования явилось изучение клинических особенностей течения хронического тонзиллита у детей с ревматическими заболеваниями, а также оценка влияния коморбидной ревматической патологии на частоту обострений, выраженность местных и общих симптомов, и характер осложнений.

Материалы методы исследование. В исследование были включены 104 детей в возрасте от 3 до 18 лет с хроническим тонзиллитом, в том числе с сопутствующими ревматическими заболеваниями, обследованные и пролеченные на базе клиники «Happy Life medicale centre» и Ташкентского государственного медицинского университета. Всем пациентам проводилось комплексное клинико-анамнестическое обследование с оценкой жалоб, частоты обострений, длительности заболевания, а также наличия системных проявлений. Объективное исследование включало фарингоскопию с оценкой состояния небных миндалин и оценку признаков интоксикационного синдрома.

Лабораторно-инструментальные методы включали общий анализ крови, определение показателей воспалительной активности (СОЭ, С-реактивный белок и ревмофакторы). Для верификации и оценки активности ревматического процесса проводились консультации ревматолога, эхокардиография, электрокардиография. При необходимости применялись дополнительные методы исследования, направленные на уточнение степени вовлечения органов-мишеней и тяжести коморбидной патологии. Статистическая обработка полученных данных осуществлялась с использованием стандартных методов вариационной статистики с определением достоверности различий ($p<0,05$).

Статистическая обработка данных осуществлялась с использованием методов вариационной статистики с определением достоверности различий ($p<0,05$).

Полученные результаты. При сборе анамнеза установлено, что большинство пациентов часто переносили респираторные заболевания, на фоне которых формировались гнойные очаги в области глотки и небных миндалин. Все наблюдаемые больные на фоне основного заболевания (ревматическая болезнь) предъявляли жалобы на боль в горле, частые ангины, неприятный запах изо рта, боли в суставах, а также общее недомогание.

Анализ частоты рецидивов хронического тонзиллита в течение года показал, что у 7 пациентов (3,8%) обострения возникали до 2 раз в год, у большинства — 55 детей (52,8%) — от 3 до 5 раз, тогда как у 42 пациентов (40,3%) отмечалось 5 и более эпизодов в год. При этом среди детей с редкими обострениями преобладали мальчики (71,4%), тогда как при частоте 3–5 раз в год чаще наблюдались девочки (67,3%). В группе с наиболее частыми рецидивами (5 и более раз в год) также доминировали мальчики (76,2%). В целом распределение по полу было относительно равномерным: 52,8% составили мальчики и 47,1% — девочки.

Таблица 1

Распределение больных по форму хронического тонзиллита

Формы ХТ	**Количество больных, n=104**		**Из них:**			
			мальчики		**девочки**	
	абс	**%**	абс	%	абс	%
Простая форма	21	20,1	8	38,1	13	61,9
Токсико-аллергическая форма 1 степени	11	10,5	6	54,5	5	45,5
Токсико-аллергическая форма 2 степени	72	69,2	41	56,9	31	43,1
Итого;	104	100	55	52,8	49	47,1

Таблица 1 отражает распределение обследованных пациентов (n=104) по клиническим формам хронического тонзиллита, а также их гендерную структуру.

Как следует из представленных данных, наибольшую долю среди всех пациентов составили больные с токсико-аллергической формой II степени — 72 человека (69,2%). Это свидетельствует о преобладании более тяжелых, декомпенсированных форм хронического тонзиллита в исследуемой выборке. В данной группе отмечено некоторое преобладание лиц мужского пола: 41 пациент (56,9%) против 31 пациентки (43,1%).

Простая форма хронического тонзиллита диагностирована у 21 пациента, что составляет 20,1% от общего числа наблюдений. В этой группе, напротив, отмечается преобладание женского пола: 13 пациенток (61,9%) и 8 пациентов мужского пола (38,1%).

Токсико-аллергическая форма I степени выявлена у наименьшего числа пациентов — 11 пациентов (10,5%). Гендерное распределение в данной группе характеризуется незначительным преобладанием мальчиков: 6 пациентов (54,5%) по сравнению с 5 пациентками (45,5%).

В целом, среди всех обследованных пациентов наблюдается умеренное преобладание лиц мужского пола — 55 больных (52,8%), тогда как доля девочек составила 49 больных (47,1%).

Таким образом, анализ распределения пациентов по формам хронического тонзиллита показывает, что в исследуемой группе значительно преобладают токсико-аллергические формы, особенно II степени, что может указывать на позднюю обращаемость пациентов за медицинской помощью или недостаточную эффективность ранее проводимой терапии. Гендерные различия носят умеренный характер и не демонстрируют выраженной зависимости от клинической формы заболевания.

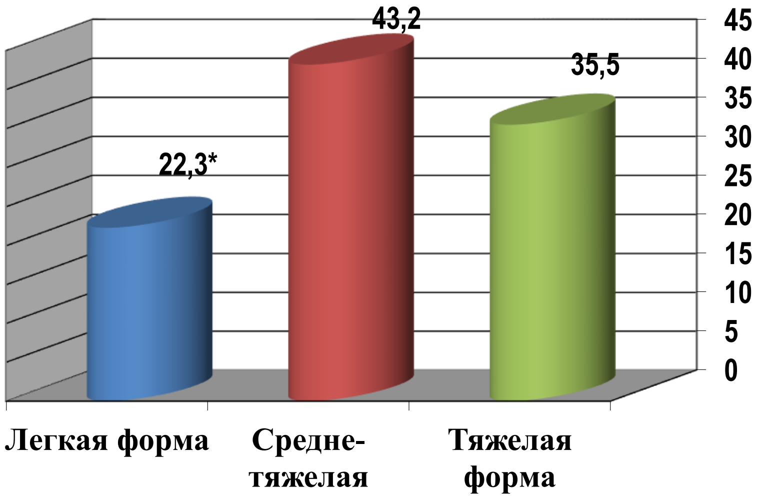

Рис. Распределение больных по степени тяжести хронического тонзиллита и клиническим критериям (%).

На данной рисунке представлено распределение обследованных пациентов в зависимости от степени тяжести хронического тонзиллита на основании клинических критериев. Как видно из диаграммы, наибольшую долю составляют пациенты со среднетяжёлой формой заболевания — 43,2%. Второе место по частоте занимает тяжёлая форма хронического тонзиллита, которая выявлена у 35,5% больных. Наименьшая доля приходится на пациентов с лёгкой формой заболевания — 22,3%.

Полученные данные свидетельствуют о преобладании клинически выраженных (среднетяжёлых и тяжёлых) форм хронического тонзиллита в исследуемой группе, что может указывать на позднюю диагностику заболевания или недостаточную эффективность проводимой ранее терапии. Низкая частота выявления лёгких форм, вероятно, связана с меньшей обращаемостью пациентов на ранних стадиях патологического процесса.

Таблица 2.

Лабораторные показатели воспалительной активности у детей с хроническим тонзиллитом в зависимости от наличия ревматической болезни

Показатели	ХТ без ревматической болезни (n=54)	ХТ + ревматическая болезнь (n=50)	p
Лейкоциты, $\times 10^9$/л	7,2 ± 1,4	9,1 ± 1,8	<0,05
СОЭ, мм/ч	12,6 ± 4,3	24,8 ± 6,1	<0,01
С-реактивный белок, мг/л	4,2 ± 1,5	12,7 ± 3,8	<0,01
Ревматоидный фактор, МЕ/мл	8,6 ± 3,2	32,4 ± 10,7	<0,01

Лабораторно-инструментальное обследование включало общий анализ крови и определение показателей воспалительной активности — скорости оседания эритроцитов (СОЭ) и уровня С-реактивного белка (СРБ).

Все дети (n=104) были разделены на две группы: с хроническим тонзиллитом без ревматической болезни (n=54) и с сочетанной патологией (ХТ + ревматическая болезнь, n=50).

Анализ полученных данных показал, что у пациентов с коморбидной ревматической патологией наблюдается более выраженная воспалительная реакция. Так, уровень лейкоцитов в группе ХТ + ревматическая болезнь составил 9,1±1,8$\times 10^9$/л, что достоверно выше по сравнению с группой без ревматической патологии — 7,2±1,4$\times 10^9$/л ($p<0,05$).

Наиболее значимые различия выявлены по показателям СОЭ и С-реактивного белка. У детей с ревматической болезнью СОЭ достигала 24,8±6,1 мм/ч, тогда как в группе без коморбидности — 12,6±4,3 мм/ч ($p<0,01$). Уровень СРБ также был значительно выше в группе ХТ + ревматическая болезнь — 12,7±3,8 мг/л против 4,2±1,5 мг/л ($p<0,01$), что свидетельствует о более выраженной активности системного воспаления.

Установлено, что у пациентов с ревматической коморбидностью уровень ревматоидного фактора был достоверно выше и составил 32,4±10,7 МЕ/мл, тогда как у детей без ревматической патологии данный показатель находился в пределах референсных значений — 8,6±3,2 МЕ/мл (p<0,01). Это свидетельствует об активации аутоиммунных механизмов воспаления.

Показатели системной воспалительной реакции также были значительно выше в группе ХТ + ревматическая болезнь. Так, уровень лейкоцитов составил 9,1±1,8×10⁹/л против 7,2±1,4×10⁹/л в группе сравнения (p<0,05). СОЭ была увеличена почти в 2 раза — 24,8±6,1 мм/ч против 12,6±4,3 мм/ч (p<0,01), а уровень С-реактивного белка составил 12,7±3,8 мг/л против 4,2±1,5 мг/л (p<0,01).

Таким образом, представленные данные демонстрируют, что наличие ревматической болезни у детей с хроническим тонзиллитом сопровождается достоверным усилением воспалительной активности, также повышение ревматоидного фактора в сочетании с ростом показателей острой фазы воспаления подтверждает наличие более выраженного иммуновоспалительного процесса у детей с хроническим тонзиллитом на фоне ревматической болезни, что может способствовать утяжелению клинического течения заболевания и требует более комплексного подхода к диагностике и лечению.

Заключение. Проведённое исследование продемонстрировало, что хронический тонзиллит у детей характеризуется высокой распространённостью токсико-аллергических и клинически выраженных форм заболевания. Существенную роль в утяжелении течения патологического процесса играет наличие ревматической болезни, сопровождающееся значительным усилением лабораторных маркеров воспаления.

Полученные данные свидетельствуют о том, что коморбидность хронического тонзиллита и ревматической патологии формирует более неблагоприятный клинический профиль заболевания, требующий ранней диагностики, углублённого лабораторного мониторинга и комплексного междисциплинарного подхода к лечению.

Таким образом, оценка воспалительных маркеров (СОЭ, С-реактивного белка, лейкоцитоза) должна рассматриваться как важный компонент стратификации тяжести состояния у данной категории пациентов. Это позволяет своевременно выявлять группы высокого риска и оптимизировать лечебно-профилактические мероприятия, направленные на снижение частоты осложнений и улучшение прогноза заболевания.

Выводы. Анализ клинической структуры хронического тонзиллита у обследованных детей показал преобладание токсико-аллергических форм заболевания, при этом наибольшую долю составила токсико-аллергическая форма II степени, что указывает на высокую частоту декомпенсированных форм и, вероятно, на позднюю диагностику или недостаточную эффективность ранее проводимой терапии.

Распределение пациентов по степени тяжести продемонстрировало доминирование среднетяжёлых (43,2%) и тяжёлых форм (35,5%) хронического тонзиллита, тогда как лёгкие формы встречались значительно реже (22,3%), что подтверждает тенденцию к прогрессированию заболевания.

У детей с хроническим тонзиллитом на фоне ревматической болезни отмечается достоверно более высокая активность воспалительного процесса по сравнению с группой без коморбидной патологии, что проявлялось повышением уровня лейкоцитов (9,1±1,8×10⁹/л, СОЭ - 24,8±6,1 мм/ч и С-реактивного белка -12,7±3,8 мг/л; p<0,01), что отражает более тяжёлое течение хронического тонзиллита и повышенный риск осложнений.

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ОСОБЕННОСТИ ТЕЧЕНИЯ ХРОНИЧЕСКОГО ТОНЗИЛЛИТА У ДЕТЕЙ С РЕВМАТИЧЕСКОЙ ПАТОЛОГИЕЙ

Omonov Akramzhon Tursunali Ugli

CHARACTERISTICS OF THE COURSE OF CHRONIC TONSILLITIS IN CHILDREN WITH RHEUMATIC PATHOLOGY

Аннотация.
В статье представлены особенности течения хронического тонзиллита у детей с ревматической патологией. Показано, что хронический тонзиллит у данной категории пациентов протекает более тяжело и рецидивирующе вследствие персистенции β-гемолитического стрептококка группы А и формирования аутоиммунных реакций. Рассмотрены основные звенья этиопатогенеза, клинические проявления, диагностические критерии и подходы к лечению сочетанной патологии. Подчёркивается роль хронического тонзиллита как значимого инфекционного очага, способствующего активации и прогрессированию ревматического процесса у детей. Обоснована необходимость комплексного и мультидисциплинарного подхода к диагностике и лечению данной группы пациентов.

Abstract.
This article presents the characteristics of the course of chronic tonsillitis in children with rheumatic pathology. It is shown that chronic tonsillitis in this category of patients is more severe and recurrent due to the persistence of group A β-hemolytic streptococcus and the development of autoimmune reactions. The main links in the etiopathogenesis, clinical manifestations, diagnostic criteria, and approaches to the treatment of combined pathology are discussed. The role of chronic tonsillitis as a significant infectious focus contributing to the activation and progression of the rheumatic process in children is emphasized. The need for a comprehensive and multidisciplinary approach to the diagnosis and treatment of this group of patients is substantiated.

Ключевые слова: *хронический тонзиллит, дети, ревматизм, стрептококк, аутоиммунитет, диагностика, лечение.*
Key words*: chronic tonsillitis, children, rheumatism, streptococcus, autoimmunity, diagnosis, treatment.*

Актуальность. Хронический тонзиллит (ХТ) у детей продолжает оставаться одной из наиболее актуальных проблем современной оториноларингологии и педиатрии, что обусловлено высокой распространённостью данной патологии, склонностью к рецидивирующему течению и её значимой ролью в формировании системных осложнений. По данным различных авторов, частота хронического тонзиллита среди детского населения достигает 15-20%, при этом отмечается тенденция к росту заболеваемости, особенно в условиях неблагоприятных экологических и социальных факторов.

Особое значение хронический тонзиллит приобретает у детей с ревматическими заболеваниями, поскольку небные миндалины рассматриваются как один из ключевых очагов хронической инфекции, способствующих развитию и прогрессированию ревматического процесса. Персистенция β-гемолитического стрептококка группы А в лакунах миндалин играет ведущую роль в запуске аутоиммунных реакций, лежащих в основе патогенеза ревматизма. В результате формируются перекрёстные иммунные реакции, направленные против собственных тканей организма, прежде всего соединительной ткани, сердца и суставов.

Несмотря на значительные достижения в изучении этиопатогенеза хронического тонзиллита и ревматизма, остаются недостаточно освещёнными вопросы взаимосвязи этих патологий у детей, ранней диагностики и оптимизации лечебной тактики. В частности, требует дальнейшего уточнения роль хронической тонзиллярной инфекции в поддержании ревматического воспаления, а также критерии выбора консервативного и хирургического лечения у данной группы пациентов.

В связи с вышеизложенным, изучение клинико-лабораторных особенностей хронического тонзиллита у детей с ревматическими заболеваниями, а также разработка эффективных методов диагностики и лечения представляет собой важную научно-практическую задачу современной медицины.

Этиопатогенез. Ведущая роль в этиологии хронического тонзиллита принадлежит бактериальной флоре, среди которой ключевое значение имеет β-гемолитический стрептококк группы А (*Streptococcus pyogenes*). Данный микроорганизм обладает выраженными вирулентными свойствами, включая способность к адгезии к эпителию лакун миндалин, продукции экзотоксинов (стрептолизин O и S, стрептокиназа, гиалуронидаза), а также формированию биоплёнок, обеспечивающих его устойчивость к иммунному ответу и антибактериальной терапии. Помимо стрептококков, в патогенезе участвуют стафилококки, пневмококки, анаэробная флора и ассоциации микроорганизмов, что усиливает хроническое воспаление.

Важным патогенетическим звеном является нарушение дренажной функции лакун небных миндалин. Анатомические особенности (извитость, глубина лакун), гиперплазия лимфоидной ткани, рубцовые изменения после повторных ангин способствуют задержке детрита, микроорганизмов и продуктов их жизнедеятельности. Это приводит к формированию хронического очага инфекции с периодическими обострениями.

Особое значение приобретает хронический тонзиллит у детей с ревматическими заболеваниями, где патогенез тесно связан с аутоиммунными механизмами. β-гемолитический стрептококк группы А обладает антигенной мимикрией — сходством своих антигенов с компонентами соединительной ткани организма человека. В частности, М-белок стрептококка имеет структурное сходство с миозином, ламинином и другими белками сердечной мышцы и суставной ткани. Это приводит к формированию перекрёстных иммунных реакций (молекулярная мимикрия), в результате которых иммунная система начинает атаковать собственные ткани организма.

Таким образом, хронический тонзиллит у детей с ревматическими заболеваниями представляет собой сложный многоуровневый патологический процесс, включающий инфекционные, иммунные и аутоиммунные механизмы. Персистенция стрептококковой инфекции в небных миндалинах не только поддерживает локальное воспаление, но и играет ключевую роль в инициации и прогрессировании системного ревматического поражения, что определяет необходимость ранней диагностики и комплексного подхода к лечению данной категории пациентов.

Эпидемиология. Хронический тонзиллит (ХТ) остаётся одной из наиболее распространённых патологий ЛОР-органов в детском возрасте. По данным эпидемиологических исследований, распространённость ХТ среди детского населения варьирует от 12 до 20%, достигая более высоких значений (до 25–30%) в группах часто болеющих детей. Заболевание наиболее часто диагностируется у детей школьного возраста (7–14 лет), что связано с функциональной активностью лимфоидной ткани глоточного кольца в данный период и высокой частотой острых респираторных инфекций. В условиях урбанизации, неблагоприятной экологической обстановки и увеличения антибиотикорезистентности отмечается тенденция к росту хронических форм тонзиллярной патологии.

Ревматические заболевания у детей, включая острую ревматическую лихорадку (ОРЛ) и хроническую ревматическую болезнь сердца (ХРБС), в настоящее время имеют меньшую распространённость по сравнению с серединой XX века, однако сохраняют свою медицинскую и социальную значимость. В различных регионах мира показатели заболеваемости ОРЛ составляют от 0,3 до 5,0 случаев на 1000 детского населения, тогда как распространённость хронической ревматической болезни сердца колеблется от 1 до 10 случаев на 1000 детей, достигая более высоких значений в странах с ограниченными ресурсами здравоохранения. В странах Центральной Азии, включая Узбекистан, проблема ревматизма остаётся актуальной, особенно среди детей школьного возраста и подростков.

Особого внимания заслуживает сочетанная патология — хронический тонзиллит у детей с ревматическими заболеваниями. По данным клинических наблюдений, у 60–80% детей, перенёсших острую ревматическую лихорадку, выявляются признаки хронического воспаления небных миндалин. В свою очередь, среди детей с хроническим тонзиллитом частота выявления ревматических осложнений составляет от 10 до 30%, в зависимости от формы заболевания, длительности течения и наличия β-гемолитической стрептококковой инфекции.

Сочетание хронического тонзиллита и ревматических заболеваний характеризуется более тяжёлым клиническим течением и высокой частотой рецидивов. У данной категории пациентов чаще формируются декомпенсированные формы ХТ, а также отмечается высокая активность ревматического процесса. Наличие хронического очага инфекции в небных миндалинах увеличивает риск первичного развития ревматизма, а также способствует прогрессированию уже имеющейся ревматической патологии, включая формирование клапанных пороков сердца.

Клиническое течение. Клинические проявления хронического тонзиллита (ХТ) у детей характеризуются значительным полиморфизмом и зависят от формы заболевания, степени компенсации воспалительного процесса, а также наличия сопутствующей ревматической патологии. В условиях коморбидности с ревматическими заболеваниями клиническая картина приобретает более выраженный и нередко атипичный характер.

В типичных случаях хронический тонзиллит проявляется местными и общими симптомами. К местным признакам относятся периодические боли или дискомфорт в горле, ощущение инородного тела, неприятный запах изо рта, наличие казеозных масс в лакунах миндалин. При фарингоскопии выявляются гиперемия и инфильтрация небных дужек, рубцовые изменения, расширение и деформация лакун, наличие гнойного или казеозного содержимого. Часто определяется увеличение и болезненность регионарных (подчелюстных) лимфатических узлов.

Общие симптомы включают признаки хронической интоксикации: повышенную утомляемость, слабость, субфебрильную температуру, снижение аппетита, головные боли. У детей школьного возраста нередко отмечается снижение успеваемости, раздражительность и нарушения сна, что отражает влияние хронического воспалительного процесса на общее состояние организма.

Особенностью клинического течения у данной группы пациентов является тесная связь между обострениями хронического тонзиллита и активностью ревматического процесса. После перенесённой ангины или обострения ХТ могут возникать или усиливаться симптомы ревматического поражения: боли в суставах (летучий артралгический синдром), признаки кардита (тахикардия, одышка, боли в области сердца), а также лабораторные маркеры воспаления. В ряде случаев тонзиллярная инфекция выступает триггером очередного ревматического приступа.

Характерным является также более выраженный синдром хронической инфекции, включающий длительную субфебрильную температуру, астеновегетативные нарушения и снижение адаптационных возможностей организма. У таких детей чаще формируются осложнения — как местные (паратонзиллярные инфильтраты, абсцессы), так и системные (ревматические пороки сердца, хронический полиартрит).

Следует отметить, что у части пациентов клиническая картина может быть стёртой, что затрудняет своевременную диагностику. В этих случаях хронический тонзиллит проявляется преимущественно неспецифическими симптомами интоксикации и периодическими жалобами на дискомфорт в горле, тогда как ревматический процесс может прогрессировать латентно.

Диагностика. Диагностика хронического тонзиллита (ХТ) у детей с ревматическими заболеваниями должна быть комплексной и направленной не только на выявление локального воспалительного процесса в небных миндалинах, но и на оценку активности системного ревматического процесса, а также степени их взаимосвязи.

Клиническое обследование включает тщательный сбор анамнеза с акцентом на частоту ангин (более 3–4 эпизодов в год), наличие перенесённой острой ревматической лихорадки, жалобы на боли в суставах, сердце, субфебрилитет и общую слабость. Важным является выявление связи между обострениями тонзиллита и ревматическими атаками.

Физикальное обследование основывается на данных фарингоскопии, при которой выявляются характерные признаки ХТ: гиперемия и инфильтрация небных дужек, рубцовые изменения, спайки, расширенные лакуны с казеозно-гнойным содержимым. Дополнительно оценивается состояние регионарных лимфатических узлов.

Лабораторная диагностика играет ключевую роль, особенно у пациентов с подозрением на ревматическую активность. Наиболее информативными являются: общий анализ крови (лейкоцитоз, ускорение СОЭ), С-реактивный белок (СРБ), антистрептолизин-О (АСЛ-О) как маркер стрептококковой инфекции, ревматоидный фактор и антистрептококковые антитела, серомукоид, фибриноген.

Бактериологическое исследование мазков из зева позволяет выявить β-гемолитический стрептококк группы А и определить его чувствительность к антибиотикам. Однако необходимо учитывать возможность персистенции микроорганизмов в биоплёнках, что снижает диагностическую чувствительность метода. Инструментальная диагностика включает: электрокардиографию (ЭКГ) для выявления признаков кардита, эхокардиографию (ЭхоКГ) с целью диагностики клапанных поражений, при необходимости — консультации кардиолога и ревматолога. Дополнительные методы, такие как иммунологические исследования (уровень IgA, IgG, IgM, цитокиновый профиль), могут использоваться для углублённой оценки иммунного статуса.

Лечение. Лечение хронического тонзиллита у детей с ревматическими заболеваниями должно быть комплексным, этапным и индивидуализированным, с учётом формы ХТ, активности ревматического процесса и общего состояния пациента.

Консервативная терапия является основным методом лечения включает: а**нтибактериальная терапия, при этом н**азначается при обострении и наличии стрептококковой инфекции. Препаратами выбора являются пенициллины (например, амоксициллин), цефалоспорины или макролиды при аллергии. Важным компонентом является вторичная профилактика ревматизма (бициллинопрофилактика). Также м**естное лечение** промывание лакун миндалин антисептическими растворами, применение антисептиков и противовоспалительных средств, физиотерапия (ультразвук, УФ-облучение, лазеротерапия).

Иммунокорригирующая терапия включает использование иммуномодуляторов, витаминов, адаптогенов с целью повышения общей резистентности организма. **Противовоспалительная терапия**

При наличии ревматической активности применяются нестероидные противовоспалительные препараты (НПВП), а при необходимости — глюкокортикостероиды под контролем ревматолога. **Санация очагов инфекции в**ключает лечение кариеса, синуситов, аденоидитов и других хронических очагов.

Хирургическое лечение (тонзиллэктомия) показано при: декомпенсированной форме хронического тонзиллита, частых рецидивирующих ангинах (≥4–5 раз в год), неэффективности консервативной терапии, наличии осложнений или высокой активности ревматического процесса, формировании ревматических пороков сердца, ассоциированных с тонзиллярной инфекцией.

У детей с ревматическими заболеваниями решение о тонзиллэктомии принимается особенно тщательно, с обязательным участием ревматолога и кардиолога. Операция проводится вне фазы активности ревматического процесса, на фоне противорецидивной терапии.

Профилактика хронического тонзиллита (ХТ) у детей с ревматическими заболеваниями является ключевым направлением, направленным на предупреждение формирования хронического очага инфекции в небных миндалинах, снижение частоты обострений и предотвращение прогрессирования ревматического процесса. Профилактические мероприятия должны носить комплексный, этапный и индивидуализированный характер.

Выводы. Хронический тонзиллит у детей остаётся широко распространённой патологией с тенденцией к росту, особенно среди часто болеющих детей, и занимает значимое место в структуре заболеваний ЛОР-органов.

Сочетание хронического тонзиллита и ревматических заболеваний у детей характеризуется более тяжёлым клиническим течением, высокой частотой рецидивов и преобладанием декомпенсированных форм заболевания.

Комплексный мультидисциплинарный подход с участием оториноларинголога, педиатра и ревматолога является необходимым условием эффективного ведения детей с данной сочетанной патологией.

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ГОСТРИЙ РЕСПІРАТОРНИЙ ДИСТРЕС-СИНДРОМ (ГРДС) У ПОСТРАЖДАЛИХ З НЕТОРАКАЛЬНОЮ ТРАВМОЮ: ОСОБЛИВОСТІ ІНТЕНСИВНОЇ ТЕРАПІЇ ПРИ МАСИВНИХ ГЕМОТРАНСФУЗІЯХ

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ACUTE RESPIRATORY DISTRESS SYNDROME (ARDS) IN PATIENTS WITH NON-THORACIC TRAUMA: FEATURES OF INTENSIVE CARE IN MASSIVE BLOOD TRANSFUSION

Анотація.
Гострий респіраторний дистрес-синдром (ГРДС) є одним із найтяжчих ускладнень критичних станів у постраждалих із тяжкою неторакальною травмою, особливо на тлі масивної крововтрати та проведення масивних гемотрансфузій. Незважаючи на відсутність первинного ураження легень, системна запальна відповідь, ендотеліальна дисфункція та трансфузійно-асоційовані механізми призводять до розвитку некардіогенного набряку легень і прогресуючої гіпоксемії. У роботі проаналізовано сучасні патофізіологічні механізми розвитку ГРДС у пацієнтів із неторакальною травмою, включаючи роль TRALI та концепцію «two-hit model». Окрему увагу приділено стратегіям інтенсивної терапії, зокрема захисній вентиляції легень, рестриктивній інфузійній терапії та сучасним протоколам масивної трансфузії. Підкреслено значення ранньої ідентифікації пацієнтів групи ризику для зниження летальності.
Abstract.
Acute respiratory distress syndrome (ARDS) is one of the most severe complications in critically injured patients with non-thoracic trauma, particularly in the setting of massive hemorrhage and massive transfusion. Despite the absence of primary lung injury, systemic inflammatory response, endothelial dysfunction, and transfusion-related mechanisms lead to non-cardiogenic pulmonary edema and progressive hypoxemia. This article analyzes current pathophysiological mechanisms of ARDS development in non-thoracic trauma patients, including the role of TRALI and the "two-hit model" concept. Special attention is given to intensive care strategies, including lung-protective ventilation, restrictive fluid therapy, and modern massive transfusion protocols. Early identification of high-risk patients is crucial for improving survival outcomes.

***Ключові слова**: гострий респіраторний дистрес-синдром, ARDS, неторакальна травма, масивна гемотрансфузія, TRALI, інтенсивна терапія, штучна вентиляція легень, системна запальна відповідь.*
***Key words**: acute respiratory distress syndrome, ARDS, non-thoracic trauma, massive transfusion, TRALI, intensive care, mechanical ventilation, systemic inflammatory response.*

Гострий респіраторний дистрес-синдром (ГРДС) у постраждалих із неторакальною травмою залишається однією з провідних причин летальності у відділеннях інтенсивної терапії, незважаючи на значний прогрес у розумінні його патофізіології та вдосконалення підходів до лікування. За сучасними уявленнями, ГРДС є клініко-патофізіологічним синдромом, що характеризується гострим початком, двобічними інфільтратами на візуалізації легень та тяжкою гіпоксемією, яка не може бути повністю пояснена серцевою недостатністю або перевантаженням об'ємом [1]. Визначення, запропоноване в рамках Берлінської класифікації, дозволило стандартизувати діагностику та стратифікацію тяжкості ГРДС, що є критично важливим для клінічної практики та наукових досліджень.

У контексті неторакальної травми розвиток ГРДС має свої особливості, оскільки первинне ушкодження легеневої тканини відсутнє, а провідну роль відіграють системні процеси, зокрема системна запальна відповідь (SIRS), ішемія-реперфузійне ушкодження та масивна трансфузійна терапія [2]. Встановлено, що тяжка травма супроводжується вивільненням великої кількості прозапальних цитокінів, таких як інтерлейкін-6, фактор некрозу пухлин-α та інші медіатори, які сприяють активації ендотелію, підвищенню судинної проникності та формуванню інтерстиціального і альвеолярного набряку [3]. Це призводить до порушення альвеолярно-капілярного бар'єру, що є ключовою ланкою патогенезу ГРДС.

Важливим патофізіологічним концептом є модель «двох ударів» («two-hit model»), яка пояснює розвиток ГРДС у пацієнтів із неторакальною травмою. Перший «удар» представлений самою травмою та геморагічним шоком, які запускають системну запальну реакцію та праймування нейтрофілів. Другий «удар» часто асоціюється з медичними втручаннями, зокрема масивними гемотрансфузіями, хірургічними операціями або інфекційними ускладненнями, що призводить до активації вже «підготовлених» імунних клітин і розвитку пошкодження легеневої тканини [4]. Ця концепція має важливе клінічне значення, оскільки підкреслює необхідність мінімізації додаткових ушкоджуючих факторів у процесі лікування.

Масивні гемотрансфузії є одним із ключових факторів ризику розвитку ГРДС у постраждалих із тяжкою крововтратою. Вони можуть призводити до специфічного ускладнення — трансфузійно-асоційованого гострого ушкодження легень (TRALI), яке клінічно практично не відрізняється від ГРДС, але має інший патогенетичний механізм [5]. TRALI розвивається внаслідок взаємодії антитіл до лейкоцитів донора з антигенами реципієнта або через активацію нейтрофілів біологічно активними ліпідами, що накопичуються у збережених компонентах крові [6]. Це призводить до масивного вивільнення медіаторів запалення, пошкодження ендотелію легеневих капілярів та розвитку некардіогенного набряку легень.

Крім TRALI, важливу роль відіграє також перевантаження об'ємом (TACO), яке може ускладнювати перебіг критичного стану та потенційно маскуватися під ГРДС [7]. Відмежування цих станів має принципове значення для вибору тактики лікування, оскільки підходи до терапії відрізняються. У пацієнтів із неторакальною травмою часто спостерігається поєднання кількох механізмів ушкодження легень, що ускладнює клінічну картину та вимагає індивідуалізованого підходу.

Окрему увагу слід приділити сучасним протоколам масивної трансфузії, які передбачають збалансоване співвідношення компонентів крові (еритроцити, плазма, тромбоцити) та раннє застосування гемостатичних препаратів, таких як транексамова кислота [8]. Дані досліджень свідчать, що дотримання принципів damage control resuscitation дозволяє знизити вираженість коагулопатії, зменшити об'єм трансфузій та, відповідно, ризик розвитку ГРДС [9]. Водночас надмірне введення рідин та компонентів крові асоціюється з погіршенням прогнозу та збільшенням частоти респіраторних ускладнень.

Ключовим компонентом інтенсивної терапії у пацієнтів із ГРДС на тлі неторакальної травми є оптимізація респіраторної підтримки, спрямована на мінімізацію вентилятор-індукованого ушкодження легень (VILI) та покращення оксигенації. Сучасні рекомендації базуються на концепції протективної вентиляції легень, що передбачає використання низьких дихальних об'ємів (4–8 мл/кг ідеальної маси тіла) та обмеження плато-тиску менше 30 см вод. ст. [10]. Доведено, що така стратегія дозволяє знизити летальність у пацієнтів із ГРДС, зменшуючи надмірне розтягнення альвеол та циклічне відкриття-закриття альвеолярних одиниць.

Важливим аспектом є також підбір оптимального рівня позитивного тиску наприкінці видиху (PEEP), який сприяє рекрутуванню альвеол та запобігає їх колапсу. Однак у пацієнтів із тяжкою травмою та гемодинамічною нестабільністю надмірно високий PEEP може знижувати венозне повернення та погіршувати серцевий викид, що потребує ретельного індивідуального підходу [11]. У цьому контексті доцільним є використання методів моніторингу гемодинаміки та оцінки респіраторної механіки для оптимізації параметрів вентиляції.

У пацієнтів із тяжким перебігом ГРДС ефективним методом покращення оксигенації є застосування прон-позиції, яка забезпечує більш рівномірний розподіл вентиляції та перфузії, зменшує шунтування крові та покращує газообмін. Рандомізовані дослідження продемонстрували значне зниження летальності при тривалому застосуванні прон-позиції (не менше 16 годин на добу) у пацієнтів із тяжкою гіпоксемією [12]. Особливої актуальності цей метод набуває у травматологічних пацієнтів, де можливості інвазивних втручань можуть бути обмежені.

Ще одним важливим напрямком є обмеження надлишкової інфузійної терапії. У постраждалих із масивною крововтратою рання агресивна інфузія є життєво необхідною, однак у подальшому надлишкове введення рідини сприяє розвитку інтерстиціального набряку легень та погіршенню оксигенації. Дослідження показали, що рестриктивна стратегія інфузійної терапії у пацієнтів із ГРДС асоціюється зі скороченням тривалості штучної вентиляції легень та перебування у відділенні інтенсивної терапії без негативного впливу на функцію нирок [13]. Таким чином, баланс між адекватною перфузією та уникненням перевантаження об'ємом є критичним елементом лікування.

Особливе значення у пацієнтів із неторакальною травмою має контроль трансфузійної терапії. Сучасні підходи передбачають використання протоколів масивної трансфузії із співвідношенням компонентів крові, близьким до 1:1:1 (еритроцити:плазма:тромбоцити), що дозволяє зменшити розвиток коагулопатії та покращити виживаність [14]. Водночас важливим є мінімізація необґрунтованих трансфузій, оскільки їх надлишок прямо корелює з ризиком розвитку ГРДС та TRALI.

Фармакологічна терапія ГРДС залишається переважно підтримуючою. На сьогодні відсутні препарати з доведеною ефективністю, що специфічно впливають на перебіг синдрому, однак застосування нейром'язових блокаторів у ранній фазі тяжкого ГРДС може покращити синхронізацію пацієнта з апаратом ШВЛ та знизити вираженість ушкодження легень [15]. Також розглядається роль кортикостероїдів, які можуть зменшувати запальну відповідь, хоча їх використання залишається дискутабельним і потребує індивідуалізованого підходу.

Таким чином, інтенсивна терапія ГРДС у постраждалих із неторакальною травмою на тлі масивних гемотрансфузій базується на комплексному підході, що включає протективну вентиляцію легень, обмеження інфузійної терапії, раціональне застосування трансфузій та використання ад'ювантних методів лікування. Врахування патофізіологічних механізмів розвитку синдрому дозволяє підвищити ефективність терапії та знизити летальність у цієї категорії пацієнтів.

Висновок

ГРДС у постраждалих із неторакальною травмою є тяжким ускладненням, що формується внаслідок системної запальної відповіді та впливу масивних гемотрансфузій. Ефективність лікування визначається раннім виявленням ризику, застосуванням протективної вентиляції, обмеженням інфузійного навантаження та раціональною трансфузійною тактикою. Комплексний і індивідуалізований підхід дозволяє покращити результати лікування та знизити летальність.

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МЕТОДИ ТА ЗАСОБИ ПОБУДОВИ ВЕБСАЙТУ ЕЛЕКТРОННОЇ БІБЛІОТЕКИ

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METHODS AND MEANS OF BUILDING AN ELECTRONIC LIBRARY WEBSITE

Анотація
У статті розглянуто методи та засоби побудови вебсайту електронної бібліотеки як сучасної інформаційної системи, орієнтованої на зручний доступ до ресурсів, ефективний пошук, рольову взаємодію користувачів і підтримку бібліотечних процесів. Особливу увагу приділено архітектурі вебзастосунку, вибору технологій реалізації, документно-орієнтованому моделюванню даних у MongoDB, використанню простих і складених індексів, а також застосуванню Aggregation Pipeline для виконання аналітичних запитів безпосередньо на рівні бази даних. Показано, що поєднання сучасного вебінтерфейсу, серверного API та оптимізованої моделі даних дає змогу побудувати ефективний вебсайт електронної бібліотеки, придатний для практичного використання.

Abstract
The article considers methods and tools for building an electronic library website as a modern information system focused on convenient access to resources, efficient search, role-based user interaction, and support for library processes. Special attention is paid to the architecture of the web application, the choice of implementation technologies, document-oriented data modelling in MongoDB, the use of simple and compound indexes, and the application of Aggregation Pipeline for analytical queries directly at the database level. It is shown that the combination of a modern web interface, server-side API, and optimized data model makes it possible to build an efficient electronic library website suitable for practical use.

Ключові слова: *електронна бібліотека, вебзастосунок, MongoDB, індексація, Aggregation Pipeline, пошук, REST API.*
Key words: *electronic library, web application, MongoDB, indexing, Aggregation Pipeline, search, REST API.*

Електронні бібліотеки вже давно перестали бути просто цифровими сховищами файлів. Сьогодні вони виконують роль повноцінних інформаційних платформ, через які користувач може знайти документ, переглянути його опис, отримати доступ до ресурсу, зберегти його до персонального списку, подати запит на отримання книги або працювати зі статистичною інформацією. Усе це означає, що вебсайт електронної бібліотеки повинен розглядатися не як звичайний сайт із переліком книг, а як комплексна система управління бібліотечними ресурсами.

Актуальність теми зумовлена тим, що зростання обсягів цифрової інформації та поширення вебтехнологій висувають нові вимоги до організації електронних бібліотек. Користувач уже не задовольняється простим пошуком за назвою документа. Він очікує швидкої реакції інтерфейсу, зручної фільтрації, персоналізації, зрозумілих статусів, безпечної автентифікації та стабільної роботи системи навіть за значної кількості запитів. У таких умовах питання побудови вебсайту електронної бібліотеки виходить за межі вебдизайну і переходить у площину архітектури, моделювання даних і оптимізації пошукових процесів.

Основна складність під час побудови таких систем полягає в поєднанні кількох різних вимог. З одного боку, електронна бібліотека повинна бути простою і зрозумілою для читача. З іншого боку, вона повинна підтримувати службові функції бібліотекаря, адміністративне керування користувачами, облік доступності примірників та аналітичні запити. Саме тому розробка електронної бібліотеки потребує не лише програмної реалізації окремих сторінок, а системного підходу до побудови всієї веб-платформи.

Важливою частиною сучасної бібліотечної системи є пошуковий модуль. Саме пошук формує перше враження користувача про вебсайт, впливає на швидкість доступу до потрібної інформації і визначає практичну цінність усієї системи. Якщо каталог містить тисячі книг, а пошук реалізовано неефективно, користувач швидко втрачає довіру до такого ресурсу. Через це побудова вебсайту електронної бібліотеки повинна включати не лише візуальне проєктування інтерфейсу, а й оптимізацію збереження та обробки даних.

З погляду архітектури сучасний вебсайт електронної бібліотеки доцільно будувати як багаторівневий веб-застосунок. На клієнтському рівні реалізується інтерфейс користувача, який відповідає за навігацію, форми пошуку, перегляд каталогу, сторінки книги, профіль користувача, модулі favourites, сторінки запитів та адміністративні панелі. На серверному рівні формується бізнес-логіка системи: реєстрація, автентифікація, перевірка ролей, робота з книгами, категоріями, позичаннями та аналітикою. На рівні даних зберігаються документи, що представляють книги, користувачів, категорії, запити на позичання та інші об'єкти системи.

Для реалізації такого підходу доцільно використовувати сучасні веб-технології. Компонентна побудова інтерфейсу дозволяє реалізувати каталог, сторінки книги, профілі, таблиці запитів та адміністративні панелі у вигляді повторно використовуваних елементів. Серверна частина, своєю чергою, повинна надавати REST API, через яке клієнтська частина отримує доступ до функцій системи. У такій моделі особливого значення набуває чітке розділення відповідальності між інтерфейсом, серверною логікою та базою даних.

Окремої уваги заслуговує вибір моделі збереження даних. Для електронної бібліотеки важливо, щоб система могла працювати з неоднорідними сутностями: книги мають один набір полів, користувачі — інший, запити на позичання — ще інший. Крім того, сама бібліотечна логіка змушує працювати з різними типами запитів: пошук за назвою чи автором, фільтрація за категорією, перевірка доступності примірників, побудова статистики за статусами запитів, визначення найпопулярніших книг. У такому контексті документно-орієнтований підхід є особливо корисним, оскільки дозволяє будувати гнучку модель даних і швидко адаптувати її до прикладних сценаріїв.

Саме тут зосереджується одна з ключових ідей цієї роботи. Йдеться про те, що побудова вебсайту електронної бібліотеки повинна базуватися не лише на виборі сучасного стеку технологій, а й на осмисленому проєктуванні моделі даних під реальні сценарії використання системи. Зокрема, структура колекцій у MongoDB має визначатися не формальним наслідуванням реляційних підходів, а типовими операціями електронної бібліотеки: пошуком книг, фільтрацією, обробкою позичань, контролем доступності й побудовою статистики.

Практична цінність такого підходу особливо добре видно на прикладі індексації. Якщо база даних зберігає велику кількість документів, але не має обґрунтованої системи індексів, будь-яка перевага сучасного веб-інтерфейсу втрачається, оскільки користувач отримує повільний відгук системи. Для електронної бібліотеки критичними є пошукові сценарії за назвою та автором, фільтрація книг за категорією й доступністю, швидкий перегляд власних запитів, перевірка дублювання запиту на ту саму книгу та виявлення прострочених випадків. Саме тому система індексації повинна формуватися відповідно до цих сценаріїв.

У межах цієї тематики наукова новизна полягає в удосконаленні підходу до організації пошуку та аналітичної обробки даних у вебсайті електронної бібліотеки на базі MongoDB шляхом поєднання гнучкого документно-орієнтованого моделювання, обґрунтованого використання простих і складених індексів та застосування MongoDB Aggregation Pipeline для виконання аналітичних запитів безпосередньо на рівні бази даних. Такий підхід дозволяє не лише покращити архітектуру системи, а й реально вплинути на її швидкодію.

Зокрема, побудова складених індексів для типових бібліотечних сценаріїв дає змогу перейти від повного перегляду колекцій до адресного доступу до потрібних документів. Якщо йдеться про пошук книги за назвою, фільтрацію за категорією або підрахунок запитів користувача за статусом, правильно побудований індекс змінює сам механізм виконання запиту. База даних перестає переглядати весь масив документів і натомість використовує індексну структуру, що суттєво скорочує час відповіді.

Не менш важливу роль відіграє застосування Aggregation Pipeline. У багатьох вебзастосунках статистика формується на рівні серверного коду: дані завантажуються з бази, групуються, обробляються й лише після цього повертаються користувачеві. Для невеликих систем це може бути прийнятним, проте для електронної бібліотеки з великим обсягом даних та частими аналітичними запитами такий підхід є неефективним. Перенесення обчислень на рівень MongoDB дозволяє суттєво зменшити мережевий обмін між сервером і базою даних, скоротити навантаження на прикладний код і прискорити побудову статистики.

Це особливо важливо для таких сценаріїв, як визначення найпопулярніших книг, статистика за категоріями, підрахунок активних, повернених, відхилених або очікуваних запитів, а також формування персоналізованої статистики користувача. У кожному з цих випадків база даних може одразу повертати вже агрегований результат, а не великий масив сирих записів. У підсумку вебсайт електронної бібліотеки набуває не лише кращої функціональності, а й кращої продуктивності.

Окрім продуктивності, важливим є й питання безпеки та надійності. Електронна бібліотека працює з кількома ролями користувачів, а тому потребує чіткого розмежування доступу. Читач повинен мати доступ до каталогу, favourites і власних запитів. Бібліотекар — до модулів керування книгами, категоріями та обробки запитів. Адміністратор — до керування користувачами й ролями. Це означає, що вебсайт електронної бібліотеки має бути побудований на основі рольової моделі доступу та використовувати сучасні механізми автентифікації, сумісні з API-орієнтованою архітектурою.

Надійність системи також залежить від правильного проєктування бізнес-правил. Наприклад, користувач не повинен мати змоги подати запит на книгу, якщо всі примірники вже недоступні. Аналогічно, система не повинна допускати дублювання активних запитів на ту саму книгу від одного користувача. Такі обмеження мають реалізовуватися не лише на рівні інтерфейсу, а й у логіці серверної частини та, частково, на рівні бази даних через унікальні та складені індекси.

Отже, побудова вебсайту електронної бібліотеки є складним багаторівневим завданням, у якому поєднуються інтерфейсні, архітектурні, пошукові, безпекові та аналітичні аспекти. Ефективність такої системи залежить не від окремого інструмента, а від того, наскільки узгоджено працюють між собою її компоненти. Саме тому сучасна електронна бібліотека повинна проєктуватися як цілісна LMS, у якій веб-інтерфейс, серверна логіка, модель даних, індексація та аналітичний контур утворюють єдину технологічну систему. Такий підхід дозволяє створювати не просто електронний каталог, а повноцінний вебресурс для роботи з бібліотечними знаннями, який є одночасно зручним для користувача, надійним у роботі та ефективним з погляду обробки даних.

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PEDAGOGICAL SCIENCES

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AKADEMIK LITSEYLARDA BOBORAHIM MASHRAB HAYOTI VA IJODINI O'RGANISHNING MAVJUD HOLATI VA INNOVATSION PEDAGOGIK TEXNOLOGIYALARDAN FOYDALANISH IMKONIYATLARI

Annotatsiya:
Ushbu maqolada akademik litseylarda Boborahim Mashrab hayoti va ijodini o'rganishning mavjud holati tahlil qilinadi hamda uni o'qitishda innovatsion pedagogik texnologiyalardan foydalanish imkoniyatlari yoritiladi. Tadqiqotda an'anaviy ta'lim usullarining kamchiliklari va interfaol metodlarning samaradorligi ko'rib chiqiladi. Shuningdek, Mashrab ijodini o'qitishda klasster, aqliy hujum, rolli o'yinlar va axborot-kommunikatsiya texnologiyalaridan foydalanish orqali o'quvchilarning bilim olish faolligini oshirish yo'llari asoslab beriladi. Natijada, innovatsion yondashuvlar ta'lim jarayonini samarali va qiziqarli tashkil etishga xizmat qilishi ta'kidlanadi.

Kalit so'zlar: *Boborahim Mashrab, akademik litsey, adabiyot ta'limi, innovatsion pedagogik texnologiya, interfaol metodlar, klasster, aqliy hujum, rolli o'yinlar, axborot-kommunikatsiya texnologiyalari, ta'lim samaradorligi.*

Bugungi globallashuv va axborotlashuv jarayonida ta'lim tizimi oldida turgan eng muhim vazifalardan biri – barkamol, mustaqil fikrlaydigan, milliy va umuminsoniy qadriyatlarga hurmat bilan qaraydigan yosh avlodni tarbiyalashdan iboratdir[1]. Bu jarayonda adabiyot ta'limi alohida o'rin egallaydi, chunki u o'quvchilarning nafaqat bilim darajasini, balki ularning ma'naviy dunyosi, estetik didi va tafakkurini shakllantiradi. Innovatsion pedagogik texnologiya — bu ta'lim jarayonini zamonaviy talablar asosida tashkil etish, o'quvchilarning bilim olish faolligini oshirish hamda dars samaradorligini kuchaytirishga qaratilgan yangicha o'qitish usullari va vositalari tizimidir. Ushbu texnologiya ta'limda an'anaviy yondashuvdan farq qiladi. An'anaviy darslarda o'qituvchi asosiy bilim manbai bo'lsa, innovatsion yondashuvda o'quvchi faol ishtirokchiga aylanadi. U mustaqil fikrlaydi, tahlil qiladi va xulosa chiqaradi. Innovatsion pedagogik texnologiyalarning asosiy maqsadi - o'quvchilarda ijodiy fikrlash, mustaqil qaror qabul qilish va muammolarni hal etish ko'nikmalarini rivojlantirishdir. Shu bilan birga, dars jarayonini qiziqarli va hayotiy qilish ham muhim vazifalardan biridir[2].

O'zbek mumtoz adabiyoti namoyandalari ijodini o'rganish orqali o'quvchilar milliy o'zlikni anglash, tarixiy xotirani tiklash va ma'naviy merosga hurmat ruhida tarbiyalanadi. Ana shunday buyuk siymolardan biri Boborahim Mashrab bo'lib, uning hayoti va ijodi o'zining chuqur falsafiyligi, erkin fikrliligi va tasavvufiy ruh bilan sug'orilganligi bilan ajralib turadi. Mashrab ijodida inson erkinligi, ilohiy ishq, haqiqatni izlash, riyokorlikka qarshi kurash kabi g'oyalar yetakchi o'rin tutadi. Bu g'oyalar bugungi yoshlar tarbiyasida ham dolzarbligini yo'qotmagan bo'lib, o'quvchilarda tanqidiy va mustaqil fikrlashni rivojlantirishda muhim ahamiyat kasb etadi. Shu boisdan ham umumiy o'rta ta'lim maktablari va akademik litseylarda Mashrab hayoti va ijodini chuqur va tizimli o'rganish zarur hisoblanadi. Biroq amaliyot shuni ko'rsatadiki, hozirgi kunda Mashrab ijodini o'qitishda asosan an'anaviy metodlarga tayanilmoqda[3]. Bu esa o'quvchilarning ijodiy faolligini to'liq ochib berishga yetarli imkon bermaydi. Zamonaviy ta'lim talablari esa o'qitish jarayonida innovatsion pedagogik texnologiyalarni keng qo'llashni, o'quvchini faol subyektga aylantirishni taqozo etadi. Shu nuqtai nazardan, Boborahim Mashrab hayoti va ijodini o'rganishda interaktiv metodlar, axborot-kommunikatsiya texnologiyalari hamda zamonaviy pedagogik yondashuvlardan foydalanish masalasi dolzarb ahamiyat kasb etadi. Ushbu maqolada aynan shu muammo tahlil qilinib, uni takomillashtirish yo'llari ko'rsatib beriladi.

Hozirgi kunda umumiy o'rta ta'lim maktablari va akademik litseylarda Mashrab hayoti va ijodi asosan an'anaviy usullarda o'qitilmoqda. Darslarda ko'proq ma'lumot berish, she'rlarni yodlash va qisman tahlil qilishga e'tibor qaratilmoqda.

Biroq, quyidagi muammolar ham kuzatiladi:[4]

a)o'quvchilarning ijodiy fikrlashi yetarli darajada rivojlanmayapti;

b)so'fiylik g'oyalari chuqur tushuntirilmaydi;

c)zamonaviy axborot texnologiyalaridan kam foydalanilmoqda.

Natijada o'quvchilar Mashrab ijodining mazmun-mohiyatini to'liq anglab yetmaydilar. Bunga dars soatlari kamligi ham yaqqol dalil bo'la oladi. Akademik litseylardan misol keltirsak, Mashrab hayoti va ijodini o'qitish uchun 2 soat (1 para) ajratilgan. Bizningcha, 4 soat ajratilsa maqsadga muvofiq bo'ladi. Talabalar ham Mashrab ijodini to'laqonli anglaydilar va bu 4 soatni quyidagicha taqsimlaymiz:

1-parada o'qituvchi tomonidan talabalarga Mashrab hayoti to'laqonli o'rgatiladi.(Ma'ruza shaklda yoki taqdimot orqali,sun'iy intelekt orqali u yurgan

[1]Karimov I.A. Yuksak ma'naviyat – yengilmas kuch. – Toshkent: Ma'naviyat, 2008.
[2] Yo'ldoshev J. Pedagogik texnologiyalar. – Toshkent: O'qituvchi, 2012.
[3] To'xliyev B. Adabiyot o'qitish metodikasi. – Toshkent: O'qituvchi, 2010.

yo'llarni jonlantirsa yana ham qiziqarliroq chiqadi) Mashrab 1640-yilda Namangan shahrida tug'ilgan. Yoshligidan ilmga va tasavvufga qiziqqan. U Mulla Bozor Oxunddan ta'lim olib, so'fiylik yo'lini tanlagan. Darveshona hayot kechirib, ko'plab safarlarda bo'lgan (Buxoro, Samarqand, Qobul, Hindiston). Uning dunyoqarashida erkinlik, muhabbat va haqiqat asosiy o'rin tutadi. Rasmiy diniy qarashlarni tanqid qilgani sabab ta'qibga uchragan. 1711-yilda Balx shahrida qatl etilgan. Mashrab o'zbek mumtoz adabiyotida erkin fikrli so'fiy shoir sifatida muhim o'rin egallaydi.

2-parada esa urg'u faqat Mashrabning ijodiga beriladi. U yozgan g'azallar,masnaviylar ,ilmiy merosi naqadar boyligi ,uning mazmuni va qanday yaratilganligi haqida ma'lumot beriladi va sharhlanadi.

Ishq o'tida yondim, kul bo'ldim, ey do'st,
Bu yo'lda men o'zimdan ham o'tdim, ey do'st.
Dunyo deganlari bir lahza soyadir,
Haq ishqida men barin unutdim, ey do'st.

Bu misralarda Mashrabning asosiy g'oyasi -ilohiy ishq va dunyodan voz kechish ifodalangan. Shoir "ishq o'ti" orqali ruhiy poklanishni, "dunyo soyadir" orqali esa hayotning o'tkinchiligini ta'kidlaydi. "O'zimdan ham o'tdim" iborasi tasavvufdagi eng yuqori daraja — nafsni yengish g'oyasini bildiradi.

Innovatsion pedagogik texnologiyalardan foydalanish imkoniyatlari. Zamonaviy ta'lim jarayonida interaktiv va innovatsion metodlardan foydalanish Mashrab ijodini samarali o'rganish imkonini beradi.

Quyidagi texnologiyalardan foydalanish maqsadga muvofiq:

1. Interaktiv metodlar

"Aqliy hujum"

"Klaster"

"Blits-so'rov"

Bu metodlar o'quvchilarning mustaqil fikrlashini rivojlantiradi.

"Aqliy hujum" metodi savollari

1.Mashrab nima uchun darveshona hayotni tanlagan deb o'ylaysiz?

2.Uning erkin fikrlari jamiyatga qanday ta'sir ko'rsatgan bo'lishi mumkin?

3.Nega Mashrab rasmiy diniy qarashlarni tanqid qilgan?

4.Agar Mashrab bugungi kunda yashaganida, qanday g'oyalarni ilgari surgan bo'lardi?

5.Mashrabning sayohatlari uning dunyoqarashiga qanday ta'sir qilgan?

6.U nega xalq orasida mashhur bo'lgan?

7.Mashrab hayotidan qanday ibrat olish mumkin?

8.Uning qatl etilishiga sabab bo'lgan omillar nimalar deb o'ylaysiz?

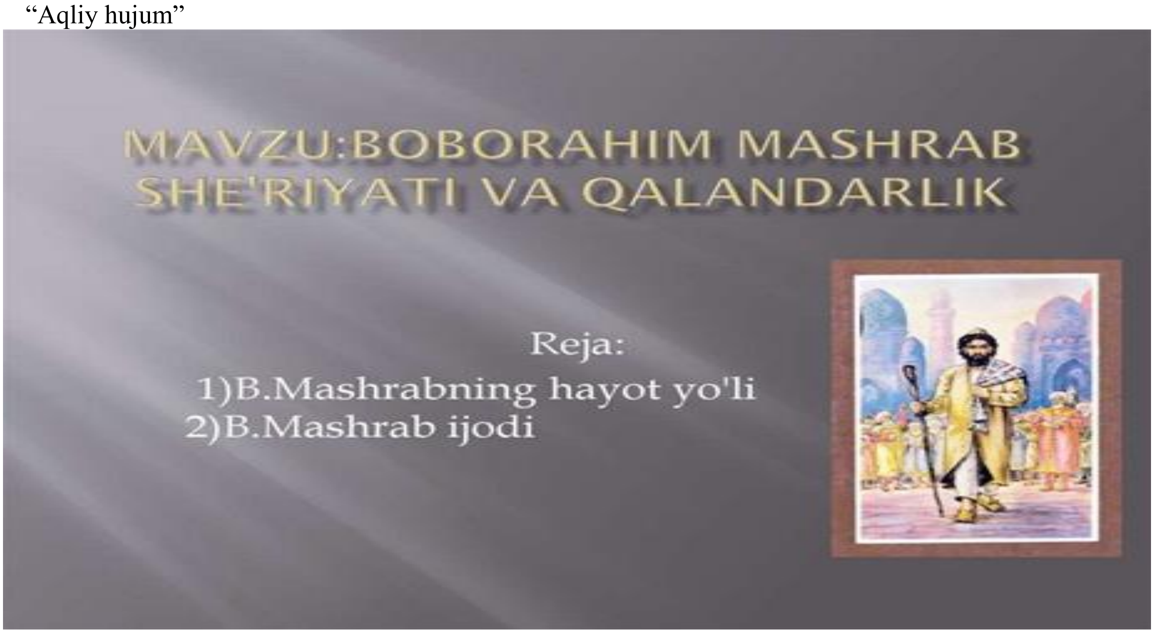
9.Mashrabning hayoti bilan boshqa so'fiy shoirlar o'rtasida qanday o'xshashliklar bor?

10.Siz Mashrab o'rnida bo'lganingizda, qanday yo'l tutgan bo'lardingiz?

Talabalar javoblarini erkin aytishadi. Har bir fikr yozib boriladi. Eng qiziqarli va asosli javoblar muhokama qilinadi.

2. Axborot-kommunikatsiya texnologiyalari

Prezentatsiyalar, video materiallar va elektron resurslar orqali Mashrab hayoti va ijodini vizual tarzda tushuntirish mumkin. Bu o'quvchilarning qiziqishini oshiradi.



3. Loyiha asosida o'qitish

O'quvchilarga Mashrab ijodi bo'yicha mustaqil tadqiqot topshiriqlari berish orqali ularning izlanish qobiliyati shakllanadi. Misol uchun Mashrab yurgan yo'llarni xaritasini chizish.

4. Rol o‘yinlari va dramatizatsiya

Mashrab hayotidan sahnalarni sahnalashtirish o‘quvchilarda obrazli tafakkurni rivojlantiradi. Misol uchun, “Mashrab va qozilar oldida haqiqat”. Hozirgi zamonimizga moslab sahna ko’rinishi qilinadi.

Qahramonlar: Mashrab, Qozilar (2–3 kishi), Kotib, Tomoshabinlar

Qozixon majlisi

Dekor: Katta zal, Markazda stol va kursilar, Devorda diniy yozuvlar

Musiqa: Past, jiddiy ohang (baraban yoki nay)

Harakat: Qozilar yuqorida o‘tiradi;Mashrab markazga olib kelinadi. Tomoshabinlar jim

Qozilardan biri:

Mashrab, sen odamlarni chalkashtiryapsan. Nega sening so‘zlaring odamlarga yoqmayapti?

Mashrab (osoyishta): Men odamlarni emas, haqiqatni uyg‘otaman.

Qozilar: Haqiqatni sen emas, biz belgilaymiz!

Mashrab: Agar haqiqatni inson emas, faqat lavozim belgilasa, u haqiqat emas.

Qozixon majlisida Boborahim Mashrabning fikrlari qozilar bilan keskin ziddiyatga kirishadi. Qozilar haqiqatni faqat o‘z qarashlari bilan cheklamoqchi bo‘lishadi, Mashrab esa haqiqat lavozim yoki kuch bilan emas, balki vijdon va qalb orqali anglanishini ta’kidlaydi. Bu ko‘rinish Mashrabning jasoratini, mustaqil fikrlashini va adolatsizlikka qarshi qat’iy turishini ochib beradi. Shuningdek, u jamiyatda erkin fikr va haqiqiy adolat har doim ham oson qabul qilinmasligini ko‘rsatadi.

Akademik litseylarda Boborahim Mashrab hayoti va ijodini o‘rganish o‘quvchilarning ma’naviy-axloqiy dunyoqarashini shakllantirishda muhim ahamiyatga ega. Amaldagi ta’lim jarayonida ushbu mavzuni o‘qitishda an’anaviy yondashuvlar ustunlik qilayotgan bo‘lsa-da, ular har doim ham o‘quvchilarning faolligi va qiziqishini to‘liq ta’minlay olmaydi. Shu sababli innovatsion pedagogik texnologiyalardan foydalanish dolzarb masalaga aylanmoqda. Interfaol metodlar, rolli o‘yinlar, klaster, aqliy hujum hamda axborot-kommunikatsiya vositalarini qo‘llash orqali Boborahim Mashrab ijodini o‘qitish jarayoni yanada samarali bo‘ladi. Bu esa o‘quvchilarda mustaqil fikrlash, tahlil qilish va ijodiy yondashuv ko‘nikmalarini rivojlantiradi. Xulosa qilib aytganda, innovatsion yondashuvlar Mashrab merosini chuqur va samarali o‘rganishga xizmat qiladi hamda uning g‘oyalarini yosh avlod ongiga yetkazishda muhim vosita hisoblanadi.

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SPEECH STRATEGIES AS A MECHANISM FOR MANAGING STUDENTS' LEARNING ACTIVITY IN THE EDUCATIONAL PROCESS

Abstract.
This article examines the role of discourse as a mechanism of social regulation and management within the educational environment. Drawing on a functional-managerial approach and the methodology of critical discourse analysis, it analyzes the speech strategies of 3rd–4th year philology students. The empirical material consists of video recordings of 45-minute Russian language lessons conducted in grades 5–11. The study identifies both the quantitative and qualitative characteristics of prospective teachers' verbal influence in relation to student age groups and disciplinary context. Particular attention is given to the factor of communicative dominance and the mechanisms by which destructive conflicts are provoked as a result of excessive directiveness and emotional volatility among young teachers. The article argues for the necessity of transitioning from spontaneous verbal reactions to deliberate technologies for managing students' cognitive activity.

Keywords: *pedagogical discourse, verbal influence, communicative dominance, directiveness, management of learning activity, critical discourse analysis.*

Introduction. The problem of verbal management of the educational process remains one of the most pressing issues in contemporary linguistic didactics. Earlier research focused primarily on describing speech acts, their typology, and formal-structural characteristics (questions, statements, directives, evaluations), whereas contemporary studies show a shift toward functional-managerial analysis of speech in the educational process. The transformation of the educational paradigm — in which learning is understood as an active process of knowledge construction — has led to a reconceptualization of the teacher's role as a speaker. Accordingly, contemporary research treats teacher speech as an instrument through which the cognitive, motivational, and behavioral activity of learners is managed.

A review of the scholarly literature shows that a teacher's speech strategies are studied as ways of realizing a subject's communicative intentions and are analyzed through speech acts. In pedagogical discourse, language is regarded as a tool of social and cognitive influence.

One of the founding figures of the cognitive-discursive approach is T.A. van Dijk. He views communication as a social process largely determined by the knowledge participants possess and how they think. In his view, whoever leads a conversation in effect manages how the interlocutor understands the situation and what conclusions they draw from it. Ordinary speech techniques thus become a means of influencing human thought. In the learning process, the teacher determines which information is perceived as self-evident and commonly accepted, and which requires specific justification. In this way, the teacher's verbal influence becomes a means of directed impact on students' thinking [1].

N. Fairclough proposed viewing language as a social practice directly linked to power and ideology. In his conception, through everyday communication people reproduce or attempt to alter the existing social order, and influence how others perceive the world and make decisions. Discourse, in his approach, reproduces, reflects, and transforms reality. In the pedagogical process, this manifests in teacher speech: through word choice and the structure of explanations, the teacher shapes and develops students' thinking, prompting deeper engagement with and understanding of the material [2].

According to O.S. Issers, verbal influence is the intentional modification of an interlocutor's thinking. In this process, strategies are not merely words but instruments through which the speaker alters the listener's knowledge, beliefs, and goals. In teaching, this means the teacher shapes the student's worldview through speech techniques [3]. The lesson thus becomes a process of consciousness management, in which the teacher's choice of words directly affects student achievement.

The study of pedagogical discourse has also developed within the academic traditions of the CIS countries. V.I. Karasik characterizes pedagogical discourse as a special form of institutional interaction whose primary goal is to integrate new members of society and transmit cultural values to them. He identifies strategies typical of this discourse — explanation, evaluation, monitoring, and organization — and highlights its pronounced asymmetry, conditioned by the difference in status between its participants [4].

According to M.Yu. Oleshkov, a lesson is a "discursive event," and within this framework every utterance of the teacher is an active unit guiding the course of discussion [5]. Oral interaction in the pedagogical process has been studied by I.N. Borisova, whose work focuses on the structure and dynamics of spontaneous dialogue, demonstrating how integrative mechanisms that harmoniously combine cognitive, pragmatic, and emotional components of communication are realized in real-time teacher–student interaction [6]. These propositions allow pedagogical discourse to be viewed as a form of managed interaction directed at achieving educational goals.

Drawing on the ideas of cognitive linguistics, we propose applying a functional-managerial approach to the analysis of teacher speech. Within this framework, speech strategies are treated not merely as linguistic units but as instruments of direct influence on the structure of learning activity. Interrogative constructions thus cease to be simple requests for information and become a means of organizing the thinking process. Evaluative statements function as a mechanism for regulating behavior and motivation, while directives serve as a means of rigidly structuring student action. It is important to understand that these strategies operate systemically: a single utterance may simultaneously diagnose knowledge and stimulate inquiry. Teacher verbal behavior thus becomes a dynamic system managing the cognitive and behavioral processes of the classroom, ensuring the stepwise achievement of educational goals.

Methods and Materials. The study is grounded in the methodology of critical discourse analysis, which allows teacher speech to be examined as a system for reproducing communicative dominance — understood not as an end in itself, but as a mechanism for directly managing learner activity. Through verbal influence and the deliberate selection of strategies, the teacher gains the capacity to design students' cognitive actions.

Observations of 3rd–4th year students enrolled in program 60230100 — Philology and Language Teaching (Russian language) — indicate that they tend to unconsciously replicate rigid communication models. A total of 42 students actively engaged in teaching practice at general education schools participated in the study.

The research was conducted in two stages. In the first stage, students independently recorded 45-minute video lessons in Russian language and literature as part of their self-directed professional development. The total corpus comprised 30 video recordings covering different age groups — from grades 5 through 11. In the second stage, during university seminars, these recordings were collectively reviewed and analyzed.

The study focused on students' self-analysis of their own speech. They examined their own utterances to detect unconscious attempts at communicative dominance. Particular attention was paid to how verbal influence and the choice of communicative strategies contribute to the development of students' cognitive and intellectual processes. Directiveness was interpreted not as an end in itself, but as a mechanism serving to organize the learning environment.

The analysis examined how speech strategies — ranging from rigid instructions to guiding remarks — allow the prospective teacher to set the algorithm for the class's cognitive activity. The developed methodology thus enabled the investigation of speech strategies as instruments for regulating behavioral patterns and managing student activity.

Results. The empirical phase of the study yielded video material on the verbal behavior of philology students conducting lessons in middle and upper secondary school grades. Quantitative analysis of 30 lessons showed that the average frequency of directive speech formulations ranges from 20 to 35 acts per 45-minute lesson. In grades 8–9, characterized by unstable discipline, the intensity of verbal pressure increased by 40%, reaching peak levels during verbal confrontations.

Observations of teacher–student interaction across different age groups revealed the following patterns:

In **grades 5–7**, students' speech strategies are predominantly constructive in character. Given students' psychological readiness to follow instructions, prospective teachers employ gentle forms of prompting. Conflict situations in these middle grades were almost entirely absent.

In **grades 8–9**, a marked shift in student behavior is observed, attributable to the psychological characteristics of adolescence. At this developmental stage, processes of self-identification and boundary-setting become primary concerns for students, and any form of directive influence may therefore be received with heightened sensitivity. In response to verbal resistance ("backtalk"), more than 80% of student teachers — without accounting for these age-specific characteristics — resort to abruptly cutting students off and raising their voices.

The analysis showed that attempts to use irony had a positive effect in only 30% of cases; in the remaining instances, the adolescent audience interpreted it as mockery, resulting in increased counter-aggression. Statistical deconstruction of speech sequences established that in 65% of cases it was the teacher's initial speech act — an ill-chosen remark or an excessively sharp tone — that served as the starting point for open conflict. Lacking sufficient psychological flexibility, student teachers engaged in a symmetrical struggle for dominance, forgetting that the adolescent reaction is often merely a defensive mechanism rather than a personal attack.

In **grades 10–11**, the issue of professional boundaries moves to the foreground. Student teachers encounter familiarity and irony from older students. Analysis of the data revealed two dominant approaches to interaction in this learning environment. The first group — comprising 35% of students — applied a strategy of "stylistic distancing," deliberately elevating their speech register and adopting a formal style to establish a barrier. The second group — encompassing 65% of students — opted for a tactic of "closing the distance" (or "audience approximation"), actively using humor relevant to the lesson content. Quantitative indicators point to a higher level of student engagement and a near-total absence of boundary-violation incidents in the second group.

Quantitative analysis showed that philology student teachers, in moments of losing classroom control, immediately revert to simplified, near-colloquial formulations carrying a strong charge of direct suppression.

Table 1.

Characteristics of Speech Formulas Across Different Age Groups

Grade	**Speech Strategy**	Examples from Observations
5–7	Schematic Directiveness	**Grades 5–7** "Mouths shut, pens out!", "Eyes on the board!", "Silence — I said so!", "Who's rustling around at the back? Sit up straight!", "Who am I explaining this for — the wall?", "One more word and you'll be answering at the board!"
8–9	Disciplinary Suppression	**Grades 8–9** "Don't you dare talk back to me.", "Planner on the desk — now get out.", "Chit-chat! Do you need a special invitation?", "Don't talk back! Answer in Russian! Hand over your planner! Speak Russian — I don't understand your jokes!", "If you can't say anything on topic, then sit down and listen to how others do it!"
10–11	Status Distancing	**Grades 10–11** "I'm not your '*aka*' *(bro, sis, teach)*!", "Show some respect for authority!", "Leave your '*ugh*' at the door!", "We're not on a first-name basis!", "I am your *teacher* — address me by my first name and patronymic!", "We're in school, not on the street!", "If you're bored — the door is right there."

To gain a detailed understanding of the structure of these acts, we categorized them according to models of influence, drawing on the approaches of leading discourse researchers. Following the classification of O.S. Issers, the first category of speech acts — termed **"operational regulation"** [3] — is the most prevalent, accounting for approximately 60% of the total. The primary function of this type of utterance is to manage student behavior. In grades 5–7 and in bilingual instruction, this is frequently expressed through simple commands such as "Mouths shut, pens out!" or "Eyes on the board!" In such situations, teacher speech functions as a technical algorithm prescribing specific steps.

According to Yu.V. Shcherbinina, the second model — **"verbal self-defense"** — is observed in grades 8–9 when control is lost [7]. These are impulsive, ironic responses to adolescent backtalk ("If you can't say anything on topic, then sit down and listen to how others do it!"). Analysis showed that such aggression provokes conflict in 65% of cases, violating the personal boundaries of adolescents.

The third approach, proposed by N.I. Formanovskaya, is called **"etiquette censorship"** [8]. Its goal is to restore respect for authority and adherence to communicative norms, particularly in grades 10–11, where students sometimes adopt an overly familiar tone. This model employs phrases that emphasize differences in status — for instance, "I'm not your '*aka*' — show some respect," or "Leave your '*ugh*' at the door." Prospective philologists use the Russian language as a means of asserting their authority, compensating for the small age gap between themselves and their students.

As demonstrated by the model of institutional coercion advanced by N. Fairclough [2] and I.A. Sternin [9], rather than constructive dialogue, blunt pressure is applied — expressed in commands such as "Planner on the desk — now get out!" or "Silence is not a request, it's a demand!" This approach, in contrast to knowledge management as conceived by T. van Dijk, degrades communication to mere forceful suppression of any student initiative.

Discussion. The study revealed that in critical situations, the priority in prospective teachers' verbal behavior is the protection of their professional status rather than pedagogical effectiveness.

The central finding of the reflective stage was that the majority of students, upon viewing recordings of their own lessons, tended to justify their sharpness rather than express surprise at it. The primary argument invoked was the external necessity of maintaining discipline; however, deeper analysis uncovered internal reasons for this disposition.

First, a decisive factor is the **age proximity** between the young specialist and upper-secondary students. A 3rd–4th year student is psychologically still close in age to their students, making them highly sensitive to displays of disrespect. Non-compliance from younger adolescents is perceived as a personal challenge, to which the teacher responds emotionally and impulsively. The absence of sufficient distance leads the teacher to "take the bait" of provocations, engaging in a symmetrical struggle for dominance — an outcome that inevitably results in the loss of pedagogical authority.

Second, a **deep contextual misunderstanding** was documented. Conflict situations in grades 8–9 frequently arose from a gap in the interpretation of meaning: what the teacher regarded as a "firm admonition," the adolescent — due to age-specific characteristics — experienced as a personal insult. Philology students, while possessing a solid foundation of linguistic knowledge, have not yet attained mastery in flexibly managing context, and compensate for this with a more directive approach. This reinforces the idea that a teacher's professional dominance must rest not on external coercion but on the management of the cognitive process. Under normal circumstances, a teacher maintains control by setting the logic of discussion and offering interpretive frameworks for the material that students find convincing.

Third, the analysis demonstrated the **ineffectiveness of attempts to weaponize philological training as a pressure tool**. Using the subject as a punitive measure — assigning complex tasks or text-copying exercises in response to noise — had virtually no effect on discipline, generating only covert resistance. In grades 10–11, the method of "formal distancing" proved more effective, provided the teacher maintained emotional stability. Any display of inappropriate emotion could instantly undermine the teacher's authority, shifting their role from leader to object of ridicule.

Conclusion. In view of the foregoing, verbal influence must not be a spontaneous reaction but a deliberate technology for managing cognitive activity. The professionalism of the future teacher lies in making verbal influence a conscious decision. It has become clear that real authority in the classroom rests not on the number of commands issued, but on the teacher's ability to construct the logic of dialogue in such a way that students accept their authority without resistance.

The central conclusion concerns **responsibility for every word spoken**. Teachers should avoid provoking conflicts through emotional volatility or an inability to regulate their emotions. Successful classroom management requires, above all, the ability to manage one's own speech: to shift tone flexibly, maintain appropriate distance, and not react to adolescent tactics. Only through strict self-control and an understanding of how words affect others can one move beyond the "power struggle" dynamic and create an atmosphere conducive to learning. The teacher's speech should serve as an instrument for guiding the student — not as a barrier to their self-expression.

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THE BOLOGNA PROCESS AND THE ORGANIZATION OF HIGHER EDUCATION: A COMPARATIVE ANALYSIS OF AZERBAIJAN AND INTERNATIONAL EXPERIENCE AND DEVELOPMENT PROSPECTS

Abstract

The Bologna Process has become one of the most significant reforms in the field of higher education, aiming to create a coherent, compatible, and quality-oriented European Higher Education Area (EHEA). Its primary objectives include improving academic mobility, ensuring comparability of qualifications, strengthening quality assurance mechanisms, and promoting lifelong learning and employability. Azerbaijan joined the Bologna Process in 2005 and has since implemented a number of structural reforms in its higher education system, including the adoption of the three-cycle degree structure (bachelor's, master's, and doctoral studies), the European Credit Transfer and Accumulation System (ECTS), diploma supplements, and institutional quality assurance practices. However, despite considerable progress, challenges remain in the effective implementation of these reforms, particularly in curriculum modernization, academic autonomy, student-centered learning, and international competitiveness.

This article examines the role of the Bologna Process in the organization of higher education, focusing on a comparative analysis of Azerbaijan and international experiences. Special attention is given to the educational models of selected European countries where Bologna principles have been successfully integrated into national education systems. The study explores the extent to which Azerbaijan's higher education institutions have adapted to these standards and identifies existing institutional, administrative, and pedagogical barriers. Comparative analysis demonstrates that while Azerbaijan has formally aligned its higher education policies with Bologna requirements, practical implementation often lags behind leading European practices.

The research also highlights future development perspectives, emphasizing the importance of digital transformation, inclusive education, academic internationalization, and stronger university-industry cooperation. Strengthening institutional governance, promoting research capacity, and enhancing quality assurance systems are considered essential for achieving sustainable progress. The article concludes that the successful realization of Bologna principles in Azerbaijan requires not only legislative compliance but also a deeper transformation of academic culture and educational management.

Keywords*: Bologna Process, higher education, Azerbaijan, European Higher Education Area, ECTS, quality assurance, academic mobility, university reforms, internationalization, educational policy*

Introduction

Higher education has become one of the central pillars of socio-economic development, innovation, and international competitiveness in the twenty-first century. Universities are no longer viewed solely as institutions for transmitting knowledge; they are now expected to contribute actively to research, technological advancement, labor market adaptation, and the formation of democratic societies. In this context, the modernization of higher education systems has become a strategic priority for both developed and developing countries. One of the most influential reform frameworks in this area is the Bologna Process, which has significantly transformed the structure and governance of higher education across Europe and beyond.

The Bologna Process was officially initiated in 1999 with the signing of the Bologna Declaration by 29 European countries. Its fundamental objective was the creation of the European Higher Education Area (EHEA), a unified academic space designed to promote comparability, compatibility, and coherence among national higher education systems (European Commission, 2023). The reform introduced several core principles, including the three-cycle degree structure (bachelor's, master's, and doctoral studies), the European Credit Transfer and Accumulation System (ECTS), diploma recognition mechanisms, student-centered learning, and institutional quality assurance (Wächter, 2020). These principles were intended to improve academic mobility, increase employability, and strengthen the global competitiveness of European universities (Zgaga, 2019).

The Bologna Process is not merely an administrative reform but also a transformation of educational philosophy. It emphasizes learner autonomy, flexible learning pathways, recognition of prior learning, and lifelong education. According to Altbach et al. (2021), the success of higher education reforms depends not only on formal policy adoption but also on the institutional capacity to implement structural and pedagogical changes. In many countries, the introduction of Bologna standards required substantial revisions of curricula, governance models, and academic assessment systems. As a result, the process has become a model of international educational cooperation and policy convergence.

Azerbaijan joined the Bologna Process in 2005 and committed itself to aligning its higher education system with European standards. Since then, significant legislative and institutional reforms have been undertaken, particularly after the adoption of the Law on Education and subsequent strategic development programs. The implementation of ECTS, diploma supplements, accreditation reforms, and the transition to a multi-level degree system represent important milestones in this transformation (Ministry of Science and Education of Azerbaijan, 2022). These reforms were also supported by participation in international academic initiatives such as Erasmus+ and Tempus projects, which strengthened institutional cooperation and academic exchange.

However, the adaptation process has not been without difficulties. Researchers note that while formal compliance with Bologna standards has largely been achieved, practical implementation remains uneven across universities (Ismayilov, 2021). Challenges include insufficient academic autonomy, limited research capacity, weak university-industry collaboration, traditional teaching methodologies, and inconsistencies in quality assurance procedures (Hüseynova, 2020). In addition, the integration of student-centered learning and digital education practices still requires deeper institutional commitment, particularly in regional universities.

International comparisons are essential for evaluating the effectiveness of Bologna reforms in Azerbaijan. Countries such as Germany, Finland, and Poland have demonstrated different yet successful models of Bologna implementation, combining national educational traditions with European integration principles (Kwiek, 2022). Their experiences show that sustainable reform depends on strong governance, transparent quality assurance, adequate funding, and institutional innovation. Comparative analysis allows for the identification of both transferable practices and context-specific limitations relevant to Azerbaijan's higher education development.

Furthermore, recent global challenges such as digital transformation, the COVID-19 pandemic, and increasing international competition have redefined the priorities of higher education governance. Universities are now expected to be more flexible, technologically adaptive, and socially inclusive. The Bologna Process itself has evolved to address issues such as digital learning, micro-credentials, social inclusion, and green transition policies (EHEA Ministerial Conference, 2024). These developments make the reassessment of Azerbaijan's progress particularly timely and necessary.

This article aims to examine the role of the Bologna Process in the organization of higher education through a comparative analysis of Azerbaijan and selected international experiences. The study focuses on identifying the achievements, challenges, and future development prospects of Bologna reforms within the Azerbaijani context. By comparing national practices with successful international models, the article seeks to provide practical recommendations for improving institutional effectiveness, academic quality, and global competitiveness in higher education.

Theoretical Foundations of the Bologna Process

The Bologna Process represents one of the most comprehensive and influential reforms in the history of European higher education. Its emergence was closely connected with the growing need for educational harmonization, academic mobility, and the international competitiveness of European universities in the context of globalization. By the end of the twentieth century, European higher education systems were highly fragmented, with significant differences in degree structures, credit systems, and diploma recognition procedures. These differences created barriers for student mobility and limited cooperation among universities across national borders (Zgaga, 2019).

The formal beginning of the Bologna Process is associated with the signing of the Bologna Declaration in June 1999 by the ministers of education from 29 European countries in Bologna, Italy. However, its intellectual and political foundations were established earlier through the Sorbonne Declaration signed in 1998 by France, Germany, Italy, and the United Kingdom. The Sorbonne Declaration emphasized the importance of harmonizing the architecture of the European higher education system and laid the groundwork for the broader Bologna reforms (Wächter, 2020). The Bologna Declaration later expanded these ideas into a continent-wide strategy for creating the European Higher Education Area.

One of the central objectives of the Bologna Process is the establishment of a transparent and comparable degree structure based on three academic cycles: bachelor's, master's, and doctoral education. This structure was designed to facilitate qualification recognition and improve the employability of graduates across Europe (European Commission, 2023). According to Altbach et al. (2021), the three-cycle model also supports lifelong learning by allowing students to enter and re-enter higher education at different stages of their professional lives. The bachelor's degree serves as the first level of academic qualification, while master's and doctoral studies focus on specialization and research development.

Another major pillar of the Bologna Process is the introduction of the European Credit Transfer and Accumulation System (ECTS). ECTS provides a standardized mechanism for measuring student workload and learning outcomes, allowing credits earned in one institution or country to be recognized by another. This system significantly strengthens academic mobility and simplifies international student exchange programs (Knight, 2021). ECTS also promotes flexibility in curriculum design and supports student-centered learning by emphasizing outcomes rather than teaching hours alone. As noted by Kehm (2020), the transition from teacher-centered to learner-centered education has become one of the most transformative aspects of Bologna reforms.

Diploma recognition and transparency are further supported through the Diploma Supplement, an official document attached to a higher education diploma that provides detailed information about the nature, level, context, and content of completed studies. This instrument helps employers and foreign universities better understand qualifications obtained in another country and reduces bureaucratic barriers to academic and professional mobility (Bergan, 2020). The Diploma Supplement has become an important tool for internationalization and labor market integration.

Quality assurance constitutes another fundamental principle of the Bologna Process. The establishment of internal and external quality assurance systems aims to improve institutional accountability, teaching standards, and public trust in higher education. The Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) provide a common framework for evaluating universities and academic programs (ENQA, 2022). Quality assurance is not limited to accreditation procedures; it also includes continuous monitoring, stakeholder participation, student feedback, and institutional self-evaluation. Harvey and Green (2021) argue that sustainable educational quality depends on a culture of continuous improvement rather than formal inspection alone.

Student-centered learning is another core dimension of Bologna reforms. Unlike traditional models where teachers dominate the learning process, student-centered education emphasizes active participation, critical thinking, independent learning, and competence-based assessment. This pedagogical shift requires significant curriculum redesign and changes in teaching methodology. According to Lea et al. (2020), student-centered learning improves both academic engagement and graduate employability by aligning education with practical skills and labor market demands.

The concept of lifelong learning also occupies an important place within the Bologna Process. Modern labor markets require continuous professional adaptation, and universities are expected to provide flexible opportunities for adult learners, professional retraining, and informal learning recognition. Lifelong learning supports social inclusion and economic sustainability by extending access to education beyond traditional student populations (Jarvis, 2021). This principle has become especially relevant in the digital era, where technological change rapidly transforms professional qualifications.

Internationalization is another strategic goal of the Bologna Process. Higher education institutions are encouraged to participate in international research networks, joint degree programs, academic mobility schemes, and cross-border partnerships. Programs such as Erasmus+ have significantly contributed to strengthening cooperation among universities and promoting intercultural competence among students and staff (de Wit & Hunter, 2021). Internationalization also enhances institutional reputation and competitiveness in the global education market.

Despite its achievements, the Bologna Process has also faced criticism. Some scholars argue that excessive standardization may weaken national educational traditions and reduce institutional diversity (Robertson, 2020). Others point to the unequal implementation of reforms across countries, where formal adoption does not always guarantee substantive change. Particularly in transitional economies, limited resources and administrative capacity often create gaps between policy and practice. Nevertheless, the Bologna Process remains a powerful framework for higher education modernization and continues to evolve in response to new challenges such as digitalization, inclusion, sustainability, and global uncertainty.

Thus, the theoretical foundations of the Bologna Process are based on harmonization, transparency, quality, flexibility, and international cooperation. These principles have shaped the development of the European Higher Education Area and continue to influence higher education reforms in both European and non-European countries. Understanding these foundations is essential for evaluating how countries such as Azerbaijan adapt Bologna principles to their national educational systems and institutional realities.

Implementation of the Bologna Process in Azerbaijan

Azerbaijan officially joined the Bologna Process in 2005 during the Bergen Ministerial Summit and thereby committed itself to aligning its higher education system with the principles of the European Higher Education Area. This step marked a significant turning point in the modernization of national higher education policy, as it opened new opportunities for academic integration, international cooperation, and structural reforms. Since then, Azerbaijan has undertaken a series of legislative, institutional, and pedagogical transformations aimed at ensuring compatibility with European higher education standards (Ministry of Science and Education of Azerbaijan, 2022).

One of the first major reforms was the adoption of the three-cycle degree system consisting of bachelor's, master's, and doctoral education. Although elements of this structure existed before formal accession to the Bologna Process, its systematic implementation accelerated after 2005. The bachelor's degree became the first cycle focused on general academic and professional preparation, while master's programs emphasized specialization and advanced competence development. Doctoral education was further restructured to strengthen research capacity and align academic qualifications with international standards (Ismayilov, 2021). This transformation improved degree comparability and facilitated diploma recognition abroad.

The implementation of the European Credit Transfer and Accumulation System (ECTS) became another important stage of reform. Azerbaijani universities gradually shifted from traditional hour-based evaluation systems to credit-based learning models. ECTS introduced clearer measurement of student workload, learning outcomes, and academic progression. This reform enhanced transparency and simplified student mobility both within Europe and among partner institutions (Hüseynova, 2020). However, in practice, some institutions initially treated ECTS as a technical calculation rather than a broader pedagogical transformation, which limited its effectiveness in supporting student-centered education.

The introduction of the Diploma Supplement also strengthened the international recognition of Azerbaijani qualifications. Universities began issuing diploma supplements in internationally accepted formats, providing detailed descriptions of academic achievements, learning outcomes, and program structures. This improved graduate competitiveness in foreign labor markets and facilitated access to further education abroad (European Commission, 2023). The Diploma Supplement became particularly important for students participating in exchange programs and international scholarship schemes.

Quality assurance reforms have also played a central role in Bologna implementation. Azerbaijan has made efforts to modernize accreditation procedures and institutional evaluation mechanisms. Internal quality assurance units were established in many universities, while external accreditation standards were gradually revised in line with the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) (ENQA, 2022). The establishment of more transparent evaluation criteria contributed to stronger accountability and encouraged universities to improve teaching quality, curriculum relevance, and administrative efficiency.

Nevertheless, scholars note that quality assurance in Azerbaijan often remains more formal than functional. In some cases, accreditation processes emphasize documentation rather than actual educational outcomes, and student participation in institutional evaluation remains limited (Mammadov, 2021). Sustainable quality culture requires not only formal procedures but also institutional commitment to continuous improvement, stakeholder engagement, and academic autonomy.

Student-centered learning represents one of the most challenging dimensions of Bologna implementation in Azerbaijan. Traditional higher education in the country has historically been based on teacher-centered instruction, memorization, and examination-focused assessment. Transitioning to student-centered models requires significant changes in curriculum design, teaching methods, and academic culture. Although policy documents support competence-based education and active learning approaches, practical implementation varies considerably across institutions (Aliyeva, 2020). In many universities, lecture-dominated teaching remains prevalent, and assessment systems are still heavily focused on theoretical reproduction rather than analytical and practical skills.

Internationalization has become another visible outcome of Bologna reforms. Azerbaijani universities have expanded participation in international cooperation programs such as Erasmus+, Tempus, and various bilateral exchange initiatives. These programs have strengthened academic mobility for students and faculty members, improved institutional partnerships, and increased exposure to European educational practices (de Wit & Hunter, 2021). Several universities have also introduced joint degree programs and English-medium instruction to attract international students and improve global visibility.

Despite these achievements, academic mobility remains relatively limited compared to many European countries. Financial constraints, language barriers, and administrative complexities continue to restrict participation rates, particularly among students from regional universities. Moreover, the internationalization process often concentrates in major institutions located in Baku, while regional universities face more serious structural limitations.

Governance and institutional autonomy also remain critical issues. Effective Bologna implementation requires universities to possess sufficient academic, financial, and administrative independence. In Azerbaijan, reforms have improved strategic planning and institutional management; however, decision-making processes in many public universities still remain highly centralized (OECD, 2022). Limited autonomy can reduce innovation, slow curriculum modernization, and weaken responsiveness to labor market demands. Strengthening university governance is therefore considered essential for the deeper realization of Bologna principles.

Digital transformation has recently become an additional priority, especially after the global COVID-19 pandemic. The rapid transition to online and blended learning exposed both strengths and weaknesses within Azerbaijani higher education institutions. While digital platforms improved accessibility and continuity of education, they also revealed gaps in technological infrastructure, digital pedagogy, and institutional preparedness (UNESCO, 2021). Integrating digital competencies into Bologna reforms is now viewed as a strategic necessity for future competitiveness.

Overall, Azerbaijan has made significant progress in aligning its higher education system with Bologna standards at the legislative and structural levels. The adoption of the three-cycle model, ECTS, diploma supplements, quality assurance mechanisms, and international cooperation frameworks demonstrates substantial institutional commitment. However, the deeper success of these reforms depends on overcoming persistent challenges related to implementation quality, academic autonomy, student-centered learning, and regional inequality. The Azerbaijani experience shows that formal integration into the Bologna Process is only the first stage; sustainable modernization requires continuous institutional transformation and long-term strategic vision.

International Experience: Comparative Analysis

The successful implementation of the Bologna Process varies significantly across countries depending on historical traditions, institutional capacity, governance models, and national education policies. Comparative analysis of international experience allows a deeper understanding of how Bologna principles can be effectively integrated into higher education systems while preserving national specificities. For Azerbaijan, examining the practices of countries such as Germany, Finland, and Poland provides valuable insights into both successful strategies and practical challenges.

Germany represents one of the most influential examples of Bologna implementation due to its strong academic tradition and decentralized university governance. Before the Bologna reforms, German higher education was characterized by long, unified degree programs such as Diplom and Magister. The transition to the bachelor–master structure required major institutional restructuring and initially faced strong academic resistance, particularly from faculty members concerned about the loss of academic depth and national educational identity (Witte, 2020). However, over time, German universities successfully integrated the three-cycle model, strengthened international student mobility, and modernized curriculum design. The country's strong quality assurance agencies and institutional autonomy significantly supported this process. According to Kehm (2020), Germany demonstrates that Bologna reforms are most effective when universities are granted flexibility in implementation rather than rigid administrative control.

Finland offers another important model, particularly in the areas of student-centered learning, digital education, and quality assurance. Finnish higher education institutions adopted Bologna principles through a highly collaborative governance approach involving universities, government agencies, employers, and student organizations. The focus was placed not only on structural reform but also on pedagogical innovation and labor market relevance (Sursock, 2021). Finland's emphasis on competence-based learning, academic advising, and flexible study pathways reflects the deeper educational philosophy of the Bologna Process. Furthermore, the country's strong investment in research and digital infrastructure enabled universities to respond effectively to contemporary challenges such as online education and international competition. Finland illustrates that the success of Bologna reforms depends heavily on educational culture and trust-based governance rather than formal compliance alone.

Poland provides a particularly relevant example for post-socialist countries undergoing educational transformation. After joining the Bologna Process, Poland rapidly restructured its higher education system by introducing ECTS, diploma supplements, accreditation reforms, and increased institutional diversification. Private universities also expanded significantly, contributing to broader access to higher education (Kwiek, 2022). However, Poland also faced challenges related to massification, funding limitations, and unequal quality across institutions. Despite these difficulties, its experience demonstrates that systemic reform can be accelerated when supported by strong national policy commitment and European integration incentives. For Azerbaijan, Poland's experience is especially relevant because both countries faced the challenge of balancing inherited centralized educational structures with new European governance standards.

Compared to these countries, Azerbaijan has achieved significant formal alignment with Bologna principles but still faces implementation gaps. The adoption of the three-cycle degree structure and ECTS reflects legislative compliance, yet student-centered learning and institutional autonomy remain less developed than in Finland or Germany. Quality assurance systems exist but often emphasize procedural documentation more than continuous academic improvement. Academic mobility opportunities have expanded, but participation remains lower due to financial, linguistic, and administrative barriers (Ismayilov, 2021).

One of the major differences lies in university governance. In Germany and Finland, universities generally enjoy greater financial and academic autonomy, allowing faster curriculum adaptation and stronger responsiveness to labor market needs. In Azerbaijan, public universities often operate within more centralized decision-making structures, which can slow innovation and reduce institutional flexibility (OECD, 2022). This comparison shows that Bologna reforms require not only structural adaptation but also governance reform that empowers universities as independent academic actors.

Another important distinction concerns the role of research and university-industry cooperation. In countries such as Germany and Finland, universities function as active innovation centers closely connected to economic development and technological advancement. Research funding, doctoral training, and industry partnerships are strongly institutionalized (Altbach et al., 2021). In Azerbaijan, although progress has been made, research productivity and university-industry collaboration remain comparatively limited. Strengthening this dimension is essential for improving both academic quality and graduate employability.

The digital transformation of higher education further highlights international differences. Finland's advanced digital infrastructure and flexible learning models allowed a smoother transition during the COVID-19 pandemic, while many Azerbaijani institutions faced technological and methodological difficulties (UNESCO, 2021). This comparison underlines the importance of integrating digitalization not as a temporary response but as a permanent strategic component of higher education reform.

At the same time, Azerbaijan possesses certain contextual advantages. Its relatively young reform system allows for faster adaptation of modern practices without the burden of deeply entrenched institutional resistance seen in some Western European countries. Participation in international programs such as Erasmus+ creates direct channels for knowledge transfer and institutional partnership. Moreover, national educational strategies increasingly recognize the importance of international competitiveness and innovation-based development.

Comparative analysis demonstrates that there is no single universal model of Bologna implementation. Successful reform depends on adapting common principles to national realities while maintaining the core values of transparency, mobility, quality, and academic freedom. Germany emphasizes autonomy and research excellence, Finland prioritizes student-centered pedagogy and trust-based governance, while Poland illustrates rapid structural adaptation under transitional conditions. Azerbaijan's challenge lies in moving beyond formal compliance toward deeper institutional transformation.

Therefore, international experience shows that the effectiveness of Bologna reforms depends less on the adoption of formal regulations and more on the creation of sustainable academic culture, institutional responsibility, and strategic investment. For Azerbaijan, learning from international models should involve selective adaptation rather than mechanical imitation, ensuring that reforms respond both to European standards and to national educational priorities.

Development Prospects and Future Challenges

The future development of higher education within the framework of the Bologna Process depends on the ability of countries to move beyond formal structural reforms and focus on sustainable institutional transformation. For Azerbaijan, this means strengthening the quality, flexibility, and international competitiveness of universities while adapting to rapidly changing global educational trends. The next stage of reform requires not only policy continuity but also a strategic vision that integrates innovation, inclusion, and academic excellence.

One of the most important future priorities is the strengthening of institutional autonomy and university governance. Effective higher education systems require universities to function as independent academic institutions capable of making decisions related to curriculum design, financial planning, research priorities, and international cooperation. In many advanced European countries, university autonomy has become a key factor in improving institutional performance and responsiveness to labor market demands (OECD, 2022). In Azerbaijan, expanding academic and administrative autonomy would encourage innovation, improve management efficiency, and enhance accountability. At the same time, autonomy must be balanced with transparent quality assurance and public responsibility.

The modernization of teaching and learning methods is another essential direction for development. Student-centered learning remains one of the core principles of the Bologna Process, yet its practical realization in Azerbaijan is still limited. Future reforms should focus on competence-based education, interdisciplinary curricula, critical thinking development, and practical skills acquisition. Traditional lecture-based instruction should gradually be replaced by active learning methods such as project-based learning, case studies, collaborative research, and digital pedagogy (Lea et al., 2020). This transformation would improve graduate employability and strengthen the relevance of higher education to social and economic needs.

Digital transformation has become one of the most urgent priorities for the future of higher education. The COVID-19 pandemic demonstrated that digital readiness is no longer optional but essential for institutional resilience. Universities must invest in modern learning management systems, digital infrastructure, cybersecurity, and faculty training for online and blended learning models (UNESCO, 2021). Digitalization also creates opportunities for micro-credentials, flexible certification systems, and lifelong learning pathways. The Bologna Process increasingly recognizes digital education as part of the broader European Higher Education Area strategy, making this area particularly relevant for Azerbaijan's future reforms.

Research capacity development and stronger university-industry cooperation are equally important for long-term progress. Universities should not only provide education but also generate innovation, scientific knowledge, and technological solutions. In many European countries, research excellence is closely connected to national economic development and global university rankings (Altbach et al., 2021). Azerbaijani universities need stronger support for doctoral education, international research collaboration, grant systems, and innovation ecosystems. Partnerships between universities and private sector organizations can improve applied research, internship opportunities, and graduate employment outcomes.

Quality assurance systems must also evolve from formal compliance mechanisms into genuine cultures of continuous improvement. Accreditation procedures should focus more on learning outcomes, student satisfaction, graduate success, and research impact rather than administrative documentation alone (ENQA, 2022). Greater student participation in institutional governance and evaluation processes would strengthen accountability and transparency. Quality assurance should be viewed as an ongoing developmental process rather than a periodic inspection exercise.

Internationalization remains a major strategic objective for future development. Participation in programs such as Erasmus+ has already improved academic mobility and institutional cooperation, but broader efforts are needed to increase global visibility. Expanding English-medium programs, attracting international faculty, supporting joint degrees, and improving foreign student services can strengthen the international profile of Azerbaijani universities (de Wit & Hunter, 2021). Internationalization also supports intercultural competence, research collaboration, and global competitiveness.

Inclusive education and equal access represent another critical future challenge. Higher education must ensure opportunities for students from diverse social, economic, and regional backgrounds, including persons with disabilities and students from rural areas. Digital inequality, financial limitations, and regional disparities continue to create barriers to equal participation in higher education (European Commission, 2023). Inclusive educational policies, scholarship programs, and accessible digital infrastructure are necessary to ensure that modernization does not increase inequality.

Another important issue is the alignment between higher education and labor market demands. Graduate unemployment and skills mismatch remain significant concerns in many transitional economies. Universities must strengthen cooperation with employers, regularly update curricula, and integrate career guidance services into academic structures (Knight, 2021). Internship programs, entrepreneurship education, and professional certification pathways can improve graduate readiness for dynamic labor markets.

At the policy level, sustainable reform requires consistency and long-term planning. Frequent policy changes without institutional preparation can weaken reform effectiveness and create administrative uncertainty. National education strategies should be based on evidence, stakeholder participation, and international benchmarking. The role of the state should shift from centralized control toward strategic coordination and support for institutional innovation.

At the same time, global trends such as artificial intelligence, green transition policies, demographic change, and geopolitical uncertainty are reshaping the future of higher education. Universities must prepare students not only for current professions but also for rapidly emerging forms of work and social responsibility. The Bologna Process itself is evolving to address these new priorities through discussions on sustainability, digital credentials, and social responsibility within the European Higher Education Area (EHEA Ministerial Conference, 2024).

In conclusion, the future of Bologna reforms in Azerbaijan depends on transforming higher education from a system of formal adaptation into a system of innovation-driven academic development. Structural reforms such as ECTS and degree comparability provide an important foundation, but sustainable success requires deeper institutional change in governance, pedagogy, research, and international engagement. The development prospects are significant, but achieving them requires strategic leadership, financial investment, and a strong commitment to educational quality and academic culture.

Conclusion

The analysis of the Bologna Process demonstrates that it is not merely a technical framework for harmonizing higher education systems, but a comprehensive reform model aimed at transforming the philosophy, structure, and governance of universities across the European Higher Education Area. Its core principles—comparability of qualifications, academic mobility, quality assurance, student-centered learning, and lifelong education—have reshaped higher education policies in many countries, including Azerbaijan.

The findings of this study show that Azerbaijan has made considerable progress in aligning its higher education system with Bologna standards. The adoption of the three-cycle degree structure, the implementation of ECTS, the introduction of Diploma Supplements, and the establishment of quality assurance mechanisms represent important institutional achievements. These reforms have significantly improved the formal compatibility of Azerbaijani higher education with European standards and expanded opportunities for international cooperation and academic mobility (Ministry of Science and Education of Azerbaijan, 2022).

However, the analysis also reveals that the implementation process remains uneven and, in some areas, largely formal. While structural reforms have been largely completed, deeper transformations in pedagogical practice, academic culture, and institutional governance are still ongoing. In particular, the transition to genuine student-centered learning, the strengthening of research capacity, and the expansion of university autonomy remain key challenges (Ismayilov, 2021). This gap between formal compliance and practical implementation is a common issue in many transitional education systems.

The comparative analysis with countries such as Germany, Finland, and Poland shows that successful Bologna implementation depends not only on legislative alignment but also on strong institutional capacity, academic freedom, and a culture of continuous improvement. These countries demonstrate that higher education reform is most effective when universities are granted autonomy, adequately funded, and closely connected to research and industry ecosystems (Altbach et al., 2021).

The study further highlights that future development of higher education in Azerbaijan should focus on several key priorities: strengthening institutional autonomy, enhancing quality assurance systems, modernizing teaching and learning methods, expanding digital transformation, and increasing internationalization. Participation in programs such as Erasmus+ has already contributed positively to academic mobility and institutional cooperation, but broader and more systematic international engagement is still needed.

In addition, ensuring equity and inclusion in higher education remains an essential policy direction. Reducing regional disparities, improving access for disadvantaged groups, and supporting digital inclusion are necessary steps for achieving a more balanced and socially sustainable education system. At the same time, closer alignment between higher education and labor market needs is crucial for improving graduate employability and reducing skills mismatch (Knight, 2021).

Overall, the Bologna Process has provided Azerbaijan with a valuable framework for modernization and international integration. However, the long-term success of these reforms depends on moving beyond formal structural alignment toward deeper institutional transformation. This includes fostering academic culture based on autonomy, innovation, and accountability, as well as ensuring that higher education institutions actively contribute to national development and global knowledge production.

Thus, the experience of Azerbaijan confirms that the Bologna Process should be understood as an ongoing evolutionary process rather than a one-time reform. Its effective implementation requires continuous adaptation, strong policy commitment, and collaboration between government, universities, and international partners.

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ПСИХОЛОГІЧНА ПІДТРИМКА УЧАСНИКІВ ОСВІТНЬОГО ПРОЦЕСУ В УМОВАХ ВІЙНИ

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PSYCHOLOGICAL SUPPORT OF PARTICIPANTS OF THE EDUCATIONAL PROCESS IN WAR CONDITIONS

Анотація.
У статті розкрито авторське бачення психологічної підтримки учасників освітнього процесу, обґрунтовано актуальність питання психологічного здоров’я школярів, здобувачів вищої освіти, викладачів, виявлено, що освіта в надзвичайних ситуаціях – це потужний спосіб зміцнення психічного здоров’я та благополуччя дітей та молоді, які постраждали від криз, здійснено аналіз причин звернення до психолога за терапією, проаналізовано роль підрозділу психологічної підтримки університету. Автором приділено увагу основним крокам щодо покращення психічного здоров’я.

Abstract.
The article reveals the author's vision of psychological support for participants in the educational process, substantiates the relevance of the issue of psychological health of schoolchildren, higher education students, and teachers, reveals that education in emergency situations is a powerful way to strengthen the mental health and well-being of children and youth affected by crises, analyzes the reasons for seeking therapy from a psychologist, and analyzes the role of the university's psychological support unit. The author pays attention to the main steps to improve mental health.

Ключові слова: *освіта, криза, психічне здоров’я, бойові дії, психологічна підтримка*
Keywords: *education, crisis, mental health, hostilities, psychological support*

Постановка проблеми. Питання хронічного стресу, тривожності учасників освітнього процесу та недостатньої готовності освітнього середовища забезпечувати стабільну психологічну підтримку, безпечний простір і ефективну психологічну допомогу в режимі реального часу залишаються недостатньо систематизованими та потребують подальшого наукового аналізу.

Аналіз останніх досліджень і публікацій. У вітчизняній науковій літературі психологічна підтримка учасників освітнього процесу в умовах війни є одним із ключових напрямків діяльності українських науковців та практиків з початку 2022 року. Т.Петренко приділяє увагу формуванню сприятливого емоційного фону навчального процесу у різних видах та каналах комунікації, В. Зливков, О. Гнатюк окреслюють особливості психосоціальної допомоги дітям війни, І.Бурлакова, В. Коваль, О. Шевяков досліджують психологічну освіту та життєстійкість в умовах війни.

Мета статті. Мета статті полягає у розкритті сутності психологічної підтримки в умовах війни, аналізі психічного здоров’я учасників освітнього процесу, дослідженні причин звернення до психолога, визначенні шляхів покращення психічного здоров’я.

Виклад основного матеріалу. Освіта в надзвичайних ситуаціях – це потужний спосіб зміцнення психічного здоров’я та благополуччя дітей та молоді, які постраждали від криз. У гуманітарних інтервенціях освіта в надзвичайних ситуаціях може дати дітям, молоді та їхнім громадам можливість об’єднуватися, знаходити сенс життя та будувати позитивні стосунки. Гарне психічне здоров'я – це стан благополуччя, за якого людина усвідомлює власні здібності, може справлятися з повсякденним стресом і робити свій внесок у розвиток громади. У дітей та молоді здорове психічне здоров'я відображається в позитивному сприйнятті себе, здатності керувати думками та емоціями, здатності будувати стосунки та здатності навчатися [8]. Психічне здоров'я є важливим для успіху дітей та молоді в школі та в житті. Психічне здоров'я дітей та молоді може непропорційно постраждати та бути легко проігнорованим у надзвичайних ситуаціях. Масштаби збитків, руйнувань та порушень шкільного та сімейного розпорядку, спричинених кризою, можуть бути приголомшливими та стресовими для дітей, молоді та їхніх опікунів, впливаючи на їхнє психічне здоров'я та благополуччя. Важливо наголосити, що не всі діти та молодь реагують однаково. Деякі можуть реагувати негайно, тоді як інші можуть проявляти ознаки дистресу набагато пізніше. Деякі можуть відчувати більш серйозні та тривалі реакції. Щоб вирішити цю проблему, сектор психічного здоров'я та психосоціальної підтримки (ПЗПСП) в Україні прагне підтримувати та сприяти психічному здоров'ю та психосоціальному благополуччю дітей та молоді, а також запобігати або лікувати проблеми психічного здоров'я [6]. У цьому контексті соціально-емоційне навчання (СЕН) допомагає дітям та молоді розвивати соціальні та емоційні навички, необхідні для розуміння та управління своїми емоціями, встановлення та досягнення цілей, демонстрації емпатії, підтримки здорових стосунків та прийняття відповідальних рішень [5]. Соціально-емоційне навчання є важливим аспектом освіти, завдяки керівництву та взірцям для наслідування, що надаються вчителями та викладачами, а також через творчі виразні активності та можливості для взаємодії з однолітками, діти і молодь вчаться розшифровувати власні думки та цінності, що дозволяє зрозуміти, як вони визначають їхні дії та як вони можуть конструктивно керувати ними. Соціально-емоційне навчання також навчає молодь враховувати та розуміти почуття та поведінку інших, включаючи однолітків з різних культур, та допомагає їм розвивати соціальні навички, необхідні для співпраці з іншими та побудови здорових стосунків. Дослідження показали, що соціальне та емоційне навчання сприяє академічному навчанню, оскільки воно допомагає молоді усвідомити свої здібності та почуватися в безпеці, а також сприяє академічним досягненням, кар'єрним результатам та загальній задоволеності життям. Соціальне та емоційне навчання допомагає молоді керувати та долати емоції та труднощі, які вона може відчувати після потенційно тривожних та травматичних подій під час міграційної подорожі. Цей процес також відіграє вирішальну роль, оскільки він надає молоді навичок, необхідних для подолання невизначеності та адаптації до нової культури та нового середовища проживання.

У Харківській та Донецькій областях, на лінії фронту на сході України, війна спустошила життя тисяч дітей, підлітків та їхніх сімей. Зі зруйнованими школами, перерваними заняттями та повсякденним життям, що переривається страхом, доступ до освіти є серйозною проблемою. У відповідь на це, заклади освіти розгортають свої інноваційні освітні програми, щоб дати змогу молодим українцям продовжувати навчання та отримувати необхідну психосоціальну підтримку.

З початку конфлікту у 2014 році та з посиленням бойових дій у 2022 році тисячі шкіл були частково або повністю зруйновані на сході країни. За даними ЮНІСЕФ, 4,6 мільйона дітей в Україні стикаються з перешкодами в здобутті освіти в умовах війни, більшість українських учнів зараз навчаються виключно онлайн або за допомогою змішаного навчання, що посилює нерівність і ставить під загрозу освіту багатьох дітей [2].

Війна в Україні вплинула на добробут п'яти мільйонів дітей шкільного віку. Глобальне партнерство з питань освіти (GPE) та його партнери допомагають зміцнити потенціал освітян щодо надання послуг з психічного здоров'я дітям [1]. GPE – це найбільший у світі фонд, що займається трансформацією освіти в країнах з низьким рівнем доходу. Як унікальне партнерство за участю багатьох зацікавлених сторін, GPE працює над забезпеченням якісної освіти, щоб кожна дитина могла розкрити свій потенціал і зробити свій внесок у побудову кращого світу. GPE підтримує країни, що постраждали від нестабільності або конфлікту, надає фінансову та технічну підтримку, щоб допомогти країнам розробити плани або рамки переходу до освіти, закладаючи основу для скоординованого підходу до їхнього відновлення шляхом визначення пріоритетних дій у середньостроковій перспективі. 22 листопада 2022 року, Україна стала членом Глобального партнерства в галузі освіти що працює в тісній координації з гуманітарними партнерами та партнерами з розвитку [3].

Підрозділи психологічної підтримки університетів надають послуги здобувачам вищої освіти, викладачам, працівникам закладу, всім хто потребує психологічної підтримки (втрата близької людини, психологічний дистрес, травматичні симптоми тощо). Підрозділ психологічної підтримки університету має на меті: сприяти психічному здоров'ю здобувачів та викладачів; допомагати здобувачам повністю реалізувати свій потенціал, щоб розвивати свої інтелектуальні та емоційні здібності та навички; покращувати успішність в університеті; розвивати університетське життя в усіх його аспектах (академічному, науковому, культурному тощо); розширювати кругозір здобувачів та підвищувати їхні амбіції. Це не є екстреними службами, прийоми проводяться на прохання особи та пропонуються якомога швидше, залежно від рівня терміновості та доступності. Початкові консультації проводяться психологами та мають на меті оцінити разом зі здобувачем необхідну подальшу підтримку та догляд у середньостроковій або довгостроковій перспективі.

«Психологи для божевільних». «Звернення до психолога лише тоді, коли у вас серйозні проблеми». Ці два твердження є упередженими поняттями, які потребують уточнення. Сьогодні ми більше не говоримо про божевілля, і звернутися до психолога можна з багатьох причин. Ми можемо звернутися до психолога, навіть коли нам добре. Ось кілька прикладів причин звернення за терапією (звичайно, цей список не є вичерпним): розплутування питань про себе, свою ідентичність, особистість, сімейне життя, соціальне життя, романтичне життя, сексуальність тощо; спільне осмислення, визначення, називання та екстерналізація того, що вас турбує, пошук сенсу в цьому та розуміння походження цих труднощів; дослідження, називання та прийняття своїх емоцій; поступове полегшення певних потенційно болісних психологічних станів: сильної тривоги, глибокого смутку, панічних атак, розладів сну тощо; здобуття впевненості в собі, бажання більше стверджувати себе, усвідомлення своїх особистих сильних сторін та рух до здорової самооцінки; здатність звільнитися та розвантажити себе від тягаря певних подій, обговорюючи їх (контекст обмеження, нестабільність, робоче навантаження, стрес, сімейні конфлікти тощо); отримання підтримки під час втрати близької людини; подолання залежностей; щоб одужати від розладів харчової поведінки (переїдання, нервова анорексія, булімія тощо) та відчувати себе спокійніше з їжею;

щоб зрозуміти та одужати від фобій (соціальної фобії, агорафобії, клаустрофобії тощо); щоб отримати підтримку, коли ви стикаєтеся з горем близької людини, яке вас турбує.

«Я хочу впоратися самостійно, мені не потрібні поради». Більшість психологів не пропонують порад; це не їхня роль. Зустріч з психологом передбачає «клінічну співбесіду», яку частіше називають «психологічною консультацією» або «психологічним сеансом». Проведення кількох таких співбесід може вважати її формою психотерапії. Існує багато форм психотерапії, і клінічні співбесіди різняться залежно від теоретичних та практичних підходів, в рамках яких працює психолог. У всіх випадках саме завдяки активному слуханню та специфічним режимам взаємодії ці клінічні співбесіди дозволяють вам вільно висловлювати свої почуття, досліджувати та відповідати на власні запитання чи проблеми. Деякі терапевтичні підходи є більш директивними, пропонуючи завдання для виконання між сеансами. У всіх випадках вам вирішувати, чи виконувати їх, та чи аналізувати їх під керівництвом психолога. Тому це залишається завданням, яке ви виконуєте самостійно.

«Я вже знаю, що мене турбує; розмова з психологом нічого не змінить». Дійсно, психолог не може змінити події чи контекст, у якому ви живете. Однак, якщо ви вже знаєте причини своїх труднощів, розмова з психологом може дозволити вам висловити їх назовні, словесно відпустити, що може сприяти внутрішньому спокою та зробити крок назад. Насправді, розмова з психологом — це не лише розуміння факторів, що лежать в основі ваших труднощів.

«Звернення до психолога в моєму навчальному закладі є табу або безглуздим». Звернення до психолога стає дедалі менш табуйованим, але насправді це не завжди розуміють через хибні уявлення. Це особисте рішення, яке стосується лише його самого. Кожен вільний експериментувати та самостійно переконатися, чи це корисно, чи ні, а також обговорювати своє рішення з близькими чи ні. Важливо не змушувати себе звертатися до психолога; це рішення належить вам.

«Мені не потрібно звертатися до психолога; я можу довіритися своїм друзям». Звісно, довіра друзям часто може бути корисною та забезпечити психологічну підтримку. (Це може залежати від друзів та характеру ваших стосунків.) У будь-якому разі, це не можна порівняти з психологічними консультаціями. Дійсно, психолог — це не друг і не родич; це професіонал, що спеціалізується на психології, і він надасть максимально об'єктивний аналіз вашої ситуації.

«Є люди, яким живеться гірше, ніж мені, тому я не хочу займати місце того, хто цього потребує більше». Це твердження відображає порівняння, самооцінку; воно також може лежати в основі внутрішнього опору говорити про свої труднощі, або, можливо, схильності применшувати неприємні психологічні стани, які ми переживаємо, відчуття неповноцінності тощо. У будь-якому разі, кожні страждання мають сенс, і одна з ролей психолога — вітати всі ваші почуття та думки, і за жодних обставин він не буде вас засуджувати. Якщо у вас виникне це відчуття під час консультації, не соромтеся поділитися ним; обмін буде ще ціннішим.

«За один сеанс я зможу одразу вирішити всі свої проблеми». Шкода, але у психологів немає чарівної палички. Кількість сеансів залежить від клінічної практики психолога, а також від того, що вас до нього приводить, ваших цілей та очікувань, якщо такі у вас є. Не психолог може полегшити ваші страждання, а радше ваш власний процес самоаналізу (зазирання всередину себе), ваш власний процес розмови про себе, обміну ідеями таким чином, щоб ви могли якомога краще проаналізувати та зрозуміти свою ситуацію (враховуючи зовнішній контекст, сім'ю тощо), а отже, і потенційні зміни у вашому сприйнятті та поведінці, які можуть відбутися, особливо під час обговорень з психологом. Звернення до психолога може допомогти вам самостійно визначити, виявити, проаналізувати та полегшити певні минулі чи теперішні труднощі чи страждання, і таким чином підійти до майбутнього з більшим спокоєм.

«Це близька людина, якій погано; я не бачу сенсу звертатися до психолога самостійно». Якщо близька людина хвора та страждає психологічно, ви не можете змусити її звернутися до психолога. Однак ви можете самостійно поговорити з психологом, щоб висловити свої почуття та таким чином захистити себе від страждань іншої людини. Ви також можете звернутися до асоціацій.

Триваючі бойові дії в Україні, щоденні авіаудари та постійний моніторинг новин підвищили рівень стресу та тривоги у кожного. Існують безкоштовні ресурси та ініціативи для підтримки психічного здоров'я. UA Mental Help, благодійна організація пропонує безкоштовні консультації з психологами-волонтерами. Ті, хто відчуває симптоми депресії, безнадії, апатії або інших станів, пов'язаних із тривогою, можуть звернутися до фонду [4]. TELEHELP Ukraine, ініціатива, організована студентами Стенфордського університету для підтримки українців в Україні та Польщі, фахівці працюють з дорослими та дітьми [9].

Важливо здобувачам вищої освіти звернути увагу на декілька кроків щодо покращення свого психічного здоров'я: вести здоровий спосіб життя: харчуватися збалансовано, спати достатньо (в середньому необхідно 8 годин) та визначити час для роботи/відпочинку/дозвілля; прийняти той факт, що поточні умови праці не ідеальні, що ваш дім став вашим робочим місцем, що заважає концентрації; бути добрішими до себе та робити усе можливе щодня; пам'ятати, що викладачі можуть бути співчутливими та розуміти, що ваші обставини є складними; пам'ятати, що якщо викладачі не розуміють ваших труднощів і не адаптуються до ситуації, важливо обговорити це з іншими здобувачами, викладачами, адміністрацією тощо. Якщо ваші результати недостатньо високі, щоб скласти іспит, це може бути важко прийняти, так, але це не означає, що ви зазнали невдачі назавжди, перездавання іспитів може дозволити вам досягти успіху, і якщо вам доведеться повторити рік, у вас буде фора, і ви зможете озирнутися назад і згадати, що минулий рік не відображав ваші повні здібності (контекст, надмірне навантаження деяких викладачів, особисті проблеми тощо); перестаньте звинувачувати себе, якщо ви не працюєте так ефективно, як зазвичай; займайтеся фізичною активністю і ходіть трохи пішки щодня [7].

Висновки. Війни та збройні конфлікти – це руйнівна сила, яка дестабілізує багато аспектів суспільного життя та має вирішальний вплив на сектор освіти. Вони змінюють не лише сьогодення, а й майбутнє, позбавляючи дітей та молодь можливості навчатися, впливаючи на їхнє фізичне, психічне та психоемоційне здоров'я, а також посилюючи нерівність. Усі учасники освітнього процесу змушені щодня стикатися з викликами та загрозами, що виникають унаслідок війни: вимушені перерви у навчанні, перехід на змішане або дистанційне навчання, повітряні бомбардування та відключення електроенергії. Школи та університети повинні бути безпечними місцями навчання. Однак права дітей та молоді на освіту та захист порушуються в більшості країн, що постраждали від конфліктів або нестабільності. Учням та працівникам освіти погрожували, озброєні сторони також використовували школи та університети як казарми та бази, для зберігання зброї, як центри утримання під вартою та для інших військових цілей, що ставило під загрозу безпеку учнів та персоналу. Короткострокові наслідки нападів на освіту включають смерть, поранення та руйнування шкільної інфраструктури. Довгострокові наслідки включають перебої з відвідуваністю, зменшення кількості учнів, зниження якості освіти та навчання. ЮНІСЕФ визначає психосоціальну підтримку як компоненти програми, що допомагають дітям, сім'ям та громадам впоратися з кризою та зміцнити або відновити здоровий психосоціальний розвиток і стійкість за умови складних обставин. Психічне здоров'я — це серйозний виклик для системи охорони здоров'я України. Було започатковано програми, спрямовані на покращення добробуту та надання послуг у сфері психічного здоров'я. Однак війна мала руйнівний вплив на психічне здоров'я населення. Багато людей адаптуються самостійно, але чим більше вони піддаються різним травматичним подіям, тим більший ризик розвитку проблем із психічним здоров'ям. Кілька факторів ускладнюють отримання своєчасної допомоги: нестача психологів та консультантів, стигма, пов'язана з психічним здоров'ям, та постійні бойові дії в деяких районах. Без належної та своєчасної психологічної підтримки ці проблеми можуть перерости в довгостроковий посттравматичний стресовий розлад, тривогу та депресію, що суттєво впливає на якість життя людини.

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BERUFLICHE KOMMUNIKATION ALS FORM DER KOMMUNIKATIVEN INTERAKTION ANGEHENDER WIRTSCHAFTSEXPERTEN

Zusammenfassung.

In diesem Artikel wird das Wesen des Begriffs „berufliche Kommunikation“ erläutert. Es werden die Arbeiten von Wissenschaftlern analysiert, die sich mit dieser Frage befasst haben. Der Artikel beleuchtet die Synonymität der Begriffe „berufliche Kommunikation“ und „Geschäftskommunikation“ sowie deren Unterschiede. Der vorliegende Artikel belegt die Bedeutung der kommunikativen Funktion.

Die Aktualität dieses Themas ergibt sich aus der Notwendigkeit, deutlich zu machen, dass angehende Fachkräfte im Bereich Wirtschaft dringend die Entwicklung von Fähigkeiten zur beruflichen Kommunikation benötigen.

Schlüsselwörter: *Kommunikation, Geschäftskommunikation, berufliche Kommunikation, Fachkräfte.*

Aktualität der Untersuchung. Ein wichtiger Faktor für die wirtschaftliche Entwicklung der Ukraine und die Überwindung der Krise im Finanzsektor ist die Reform der Ausbildung von Fachkräften im Bereich Wirtschaft sowie die Modernisierung des Berufsbildungssystems insgesamt im Einklang mit internationalen Standards.

Die Integration in den Europäischen Bildungsraum und die Orientierung an den Wirtschaftssystemen der entwickelten Länder der Welt haben neue Anforderungen an die Vorbereitung von Studierenden wirtschaftswissenschaftlicher Fachrichtungen auf ihre zukünftige berufliche Tätigkeit mit sich gebracht. Für Studierende wirtschaftswissenschaftlicher Fachrichtungen ist dieses Thema mit vielen Widersprüchen behaftet und bedarf daher weiterer Untersuchung.

Die Aktualität des Problems der Herausbildung einer Kultur der beruflichen Kommunikation bei angehenden Wirtschaftswissenschaftlern an Hochschulen im Kontext der Integrationsprozesse sowie die Notwendigkeit ihrer Untersuchung und Lösung ergeben sich aus einer Reihe von Widersprüchen zwischen:

– den steigenden gesellschaftlichen Anforderungen an die berufliche Kompetenz zukünftiger Ökonomen und dem unzureichenden Grad ihrer Vorbereitung auf die Tätigkeit unter sich wandelnden sozioökonomischen Bedingungen;

– der Notwendigkeit, Wirtschaftswissenschaftler mit einer ausgeprägten Kultur der beruflichen Kommunikation auszubilden, sowie der unzureichenden Entwicklung von Theorie und Praxis zur Förderung der beruflichen Kommunikationsfähigkeiten bei angehenden Fachkräften dieses Fachgebiets.

Analyse aktueller Forschungsarbeiten und Veröffentlichungen. Die Analyse der psychologisch-pädagogischen Literatur hat gezeigt, dass in letzter Zeit sowohl inländische als auch ausländische Forscher ein gesteigertes Interesse an Aspekten der interkulturellen, fremdsprachlichen beruflichen Kommunikation zeigen, insbesondere: Die Besonderheiten der beruflichen Ausbildung und der Lehrmethoden für angehende Ökonomen wurden untersucht von: N. Babych, L. Bosova, N. Drab, L. Znikina, I. Kozubovskaya, N. Krylova, I. Marenkova und L. Novikova.

G. Sagach definiert berufliche Kommunikation als einen Prozess der Verbreitung beruflicher Informationen, die die Bedürfnisse der Vertreter eines bestimmten Berufs widerspiegeln [8].

F. Khmil, M. Doronina, A. Kovaljov, O. Kubrak, M. Lebedeva und N. Potello untersuchten das Phänomen der Geschäftskommunikation.

Ziel dieses Artikels ist es, den Begriff „berufliche Kommunikation“ zu erörtern und zu erläutern.

Darstellung des Hauptthemas. Der Begriff der beruflichen Kommunikation hat eine weite und eine enge Bedeutung. Im ersten Sinne lässt er sich als die kommunikativen Fähigkeiten und Eigenschaften definieren, die einem Fachmann im Gegensatz zu einem Laien eigen sind. Ein Fachmann wird in diesem Fall als eine Person betrachtet, die über umfangreiche Erfahrung und hohe berufliche Standards verfügt. Im engeren Sinne umfasst die berufliche Kommunikation die für einen bestimmten Beruf charakteristischen Merkmale. Berufliche Kommunikation ist ein wichtiges Mittel und eine Voraussetzung für die Bewältigung der Aufgaben einer bestimmten beruflichen Tätigkeit. Während Menschen außerhalb ihrer beruflichen Tätigkeit von persönlichen Motiven geleitet werden, wird das Ziel der beruflichen Kommunikation durch den Charakter und die Anforderungen der beruflichen Tätigkeit bestimmt.

Es wurde festgestellt, dass die Frage der beruflichen Kommunikation künftiger Wirtschaftsexperten im Einklang mit internationalen Anforderungen nicht gelöst werden kann, ohne bei ihnen eine Kultur der beruflichen Kommunikation zu etablieren und zu fördern. Vom Entwicklungsstand der Kultur der beruflichen Kommunikation hängt in hohem Maße die Fähigkeit eines Wirtschaftswissenschaftlers ab, seine Gedanken logisch und überzeugend auszudrücken, positive Beziehungen zu Mitarbeitern und Partnern aufzubauen, ein positives Arbeitsklima im geleiteten Team zu schaffen, eine angemessene psychologische Haltung einzunehmen, Kommunikationsbarrieren zu überwinden usw. Um die wichtigsten Ansätze zum Verständnis des Wesens, der Struktur und der Besonderheiten der Herausbildung einer Kultur der professionellen Kommunikation bei angehenden Wirtschaftswissenschaftlern zu analysieren, ist es notwendig, die Funktionen der Kommunikation zu betrachten.

Kommunikationsfunktionen (von lat. function – Ausführung, Verwirklichung) sind die äußere Manifestation der Eigenschaften der Kommunikation, also jene Aufgaben, die sie im Rahmen der sozialen Aktivitäten des Individuums erfüllt.

Es gibt verschiedene Klassifizierungen der Kommunikationsfunktionen: Einige Wissenschaftler betrachten Kommunikation im Kontext ihrer organischen Einheit mit dem Leben der Gesellschaft als Ganzes und den unmittelbaren Kontakten zwischen Menschen, andere als Informationsaustausch, Interaktion und gegenseitige Wahrnehmung der Menschen, wieder andere unter dem Gesichtspunkt des Kommunikationsziels. Fasst man die verschiedenen Ansätze zur Frage der Kommunikationsfunktionen zusammen, so lässt sich von einem vielschichtigen Charakter dieses Phänomens sprechen.

Der bekannte Experte für Kommunikationstheorie und -praxis F. S. Batschewitsch unterscheidet folgende Kommunikationsfunktionen:

- die Kontaktfunktion (Schaffung einer Atmosphäre gegenseitiger Bereitschaft, Informationen zu übermitteln und aufzunehmen sowie den Kontakt bis zum Abschluss des Kommunikationsvorgangs aufrechtzuerhalten);

- die Informationsfunktion (Austausch von Informationen, Fragen und Antworten);

- Motivationsfunktion (Anregen des Adressaten zu bestimmten Handlungen);

koordinativ (Abstimmung der Handlungen von Kommunen und Kantonen):

- kognitiv (angemessene Wahrnehmung und Verständnis des Inhalts von Mitteilungen);

- emotiv (Austausch von Emotionen);

- Beziehungsaufbau (Verständnis der eigenen Rolle im System der Rollen-, Status-, geschäftlichen und zwischenmenschlichen Beziehungen); regulativ (je nach dem Ziel, das sich der Sprecher setzt, organisiert er seine Kommunikation und hält sich an bestimmte Strategien und Taktiken).

All diese Funktionen stehen im Kommunikationsprozess in enger Wechselwirkung zueinander.

Die berufliche Kommunikation im Bereich der Geschäftsbeziehungen erfüllt auch andere Funktionen:

- instrumentelle Funktion (Erhalten und Weitergeben von Informationen, die für die Durchführung einer bestimmten beruflichen Handlung oder für die Entscheidungsfindung erforderlich sind);

- integrative Funktion (Mittel zur Zusammenführung von Geschäftspartnern für einen gemeinsamen Kommunikationsprozess);

- Selbstdarstellungsfunktion (Demonstration der persönlichen Intelligenz und des Potenzials);

- Transmissionsfunktion (Vermittlung konkreter Handlungsweisen);

- Funktion der sozialen Kontrolle (Regulierung des Verhaltens und manchmal – wenn es um Geschäftsgeheimnisse geht – auch der sprachlichen Äußerungen der Teilnehmer an der geschäftlichen Interaktion);

- die Sozialisierungsfunktion (Entwicklung von Fähigkeiten im Bereich der Geschäftskommunikation);

- die expressive Funktion (das Bestreben der Geschäftspartner, ihre emotionalen Empfindungen gegenseitig zu vermitteln und zu verstehen) [3]

Bei der Präzisierung der Schlüsselbegriffe wurde auf der Grundlage einer Analyse der wissenschaftlichen Literatur eine paradoxe Tatsache festgestellt: Im Zuge der Entwicklung der kulturbezogenen Wissenschaften werden die Vorstellungen von Kultur nicht konkretisiert, sondern verlieren im Gegenteil an Bestimmtheit. Auf der Grundlage einer Analyse der philosophischen, soziologischen, linguistischen und psychopädagogischen Literatur wurde festgestellt, dass die Kommunikationskultur eine der zentralen Komponenten der Berufskultur eines Ökonomen ist. Sie vereint in sich einen Komplex aus Wissen, Werten und Verhaltensmustern, die für Situationen der Geschäftskommunikation charakteristisch sind, sowie die Fähigkeit, diese in der Praxis umfassend anzuwenden, um die Effektivität der gemeinsamen Tätigkeit zu gewährleisten. Die Kultur der beruflichen Kommunikation zeichnet sich durch den Entwicklungsstand kommunikativer Kenntnisse und Fähigkeiten aus und ermöglicht eine zwischenmenschliche Interaktion, die auf die effektive Erfüllung beruflicher Pflichten ausgerichtet ist.

Auf der Grundlage einer Analyse der Forschungsergebnisse von Wissenschaftlern zum Wesen und zur Zusammensetzung der Kultur der beruflichen Kommunikation angehender Ökonomen wurde der Begriff „Kultur der beruflichen Kommunikation von Fachkräften im Wirtschaftsbereich“ präzisiert, der als integratives Konstrukt verstanden wird, das positive Ergebnisse in Situationen der Geschäftskommunikation gewährleistet und kulturspezifisches Wissen vereint, das mit Modellen der Geschäftsanalyse; verhaltensbezogene und soziolinguistische Fähigkeiten, die eine Anpassung an verschiedene Umstände der Geschäftskommunikation ermöglichen; sowie persönliche Eigenschaften, die die Entwicklung einer positiven und toleranten Einstellung zur kommunikativen Interaktion fördern.

Das Wesen der Kultur der beruflichen Kommunikation von Ökonomen besteht in der Verbindung von moralisch-ethischen Normen, universellen Werten und Ähnlichem. Nach der Untersuchung der Arbeiten von Wissenschaftlern, die sich mit der Entstehung der Kultur der beruflichen Kommunikation von Fachleuten verschiedener Branchen sowie mit den Besonderheiten der beruflichen Tätigkeit von Wirtschaftswissenschaftlern befasst haben, wurden die miteinander verbundenen Komponenten ihrer beruflichen Kommunikationskultur herausgearbeitet: motivations- und wertorientiert, kognitiv-erkennend, interaktiv-aktivitätsorientiert, kommunikativ-sprachlich und emotional-willensorientiert.

Die genannten Komponenten der Kommunikationskultur eines Wirtschaftswissenschaftlers sind eng miteinander verflochten. Jede von ihnen umfasst einen Komplex aus entsprechenden Kenntnissen, Fähigkeiten, Fertigkeiten sowie Kommunikationsregeln und -normen. Die motivationale und wertorientierte Komponente der professionellen Kommunikationskultur eines zukünftigen Wirtschaftsexperten umfasst eine Reihe von Bedürfnissen, Motiven und Wertvorstellungen, die die kommunikative Ausrichtung des Experten sowie den Erfolg seiner Zusammenarbeit mit Mitarbeitern und Kunden bestimmen. Zum Inhalt der Motivations- und Wertkomponente gehören zudem Kenntnisse über Methoden zur Gewinnung und Aufrechterhaltung der Aufmerksamkeit, die Fähigkeit, den eigenen emotionalen Zustand objektiv einzuschätzen und zu regulieren, den Gesprächspartner (Kunden) zu verstehen und richtig einzuschätzen sowie konfliktfreie Kommunikationsformen zu beherrschen. Die kognitiv-erkennende Komponente charakterisiert die Fähigkeit, das Verhalten von Mitarbeitern angemessen und unvoreingenommen wahrzunehmen, ihre Motive und Empfindungen sowie individuelle Besonderheiten zu verstehen. Die interaktiv-handlungsorientierte Komponente setzt die Fähigkeit voraus, in einer bestimmten Situation die zweckmäßigste Haltung und den zweckmäßigsten Kommunikationsstil gegenüber dem Gesprächspartner zu wählen. Die kommunikativ-sprachliche Komponente der Kommunikationskultur eines Ökonomen charakterisiert den informations- und bedeutungsbezogenen Aspekt der beruflichen Interaktion sowie die sprachliche Aktivität: die Fähigkeit, Gedanken und Gefühle verständlich auszudrücken, den Wortschatz der Sprache zu beherrschen sowie verbale und nonverbale Mittel des Informationsaustauschs mit Untergebenen einzusetzen.

Die emotional-willensmäßige Komponente zeigt sich in der Angemessenheit der emotionalen Reaktionen auf die kommunikative Intuition, in der Fähigkeit, die richtige Intonation zu wählen, den Wortschatz ausdrucksstark einzusetzen und entsprechend darauf zu reagieren. Das Vorstehende liefert die Grundlage für die Festlegung einer Reihe pädagogischer Voraussetzungen für die Herausbildung einer Kultur der beruflichen Kommunikation bei angehenden Wirtschaftswissenschaftlern an Hochschulen.

In der wissenschaftlichen Literatur wird neben dem Begriff „berufliche Kommunikation“ häufig der Begriff „geschäftliche Kommunikation“ verwendet, wobei beide als Synonyme gelten. Darüber hinaus werden in der psychologischen Literatur häufig zwei Arten der Kommunikation unterschieden – informelle und formelle. Ersteres ist subjektiv und ungeregelt; sein Ziel und sein Charakter werden weitgehend durch die persönlichen Beziehungen der Menschen bestimmt (Mutter – Kind, Ehemann – Ehefrau). Formelle Kommunikation ist durch die sozialen Funktionen des Menschen bedingt und in Form und Inhalt geregelt (Vorgesetzter – Untergebener).

Die geschäftliche Kommunikation gehört zur formellen Kommunikation, erfolgt nach bestimmten Regeln und zielt darauf ab, Kontakte zu knüpfen und Beziehungen zwischen Akteuren zu pflegen, die an einer gemeinsamen Tätigkeit interessiert sind. Der ukrainische Wissenschaftler F. Khmil untersucht die Geschäftskommunikation unter dem Gesichtspunkt der Managementtätigkeit. Er liefert eine Definition dieses Phänomens und legt dabei den Schwerpunkt auf dessen kommunikativen Aspekt, der „ein wesentlicher Bestandteil der Kommunikation“ ist und „im Informationsaustausch besteht, durch den der Führungskraft die Verpflichtung auferlegt wird, effektive Entscheidungen zu treffen und seinen Untergebenen die wesentlichen Informationen zu vermitteln“. Im geschäftlichen Bereich verbringt der Mensch einen Großteil seines Lebens. Hier spielt er eine ganze Reihe spezifischer Rollen: Fachkraft, Führungskraft, Untergebener, Kollege usw. Jede Rolle wird in einer bestimmten Situation ausgeübt und durch bestimmte soziale Normen und Regeln geregelt. Geschäftskommunikation zeichnet sich dadurch aus, dass ihr Ziel durch die Aufgaben der jeweiligen Tätigkeit bestimmt wird – sei es in der Produktion, im Dienstleistungsbereich, in der Wissenschaft usw. Die berufliche Tätigkeit beinhaltet die Kommunikation der Interaktionspartner als notwendiges Mittel zur Gewährleistung ihrer Effektivität.

Wissenschaftler haben die Persönlichkeitsmerkmale eines Fachmanns definiert, der über eine Kultur der geschäftlichen Kommunikation verfügt. Es handelt sich um eine geistig reiche Persönlichkeit, die über kreative Fähigkeiten verfügt, Kenntnisse in den Grundlagenfächern sowie Fertigkeiten und Kompetenzen der professionellen Kommunikation besitzt, neue Ideen entwickelt und unkonventionelle Ansätze nutzt sowie neueste Technologien einführt; „…engagiert in ihrer Arbeit, von ihr begeistert, orientiert an universellen Werten sowie der weltweiten und nationalen geistigen Kultur“ [6]. Bei der Untersuchung der Vorbereitung auf die Geschäftskommunikation von Vertretern verschiedener Berufe haben Wissenschaftler dem Problem der Heranbildung der Kommunikationsbereitschaft zukünftiger Manager und Ökonomen nicht genügend Aufmerksamkeit geschenkt, was die Notwendigkeit einer Untersuchung der wichtigsten Tendenzen der Lehr- und Erziehungsarbeit an wirtschaftswissenschaftlichen Hochschulen begründet.

Unabhängig davon, in welcher Form die Kommunikation stattfindet, handelt es sich um eine geschäftliche Kommunikation, wenn ihr bestimmender Inhalt eine gesellschaftlich bedeutsame gemeinsame Tätigkeit ist.

Das Wesentliche in der geschäftlichen Kommunikation ist der Gegenstand der Kommunikation, d. h. die gemeinsame Angelegenheit und die Einstellung der Beteiligten dazu. Die sachlichen Standpunkte der Partner sind im Kommunikationsprozess entscheidend, und die Fähigkeit, die sachlichen Standpunkte des anderen zu verstehen, ist eine notwendige Voraussetzung für den Erfolg der geschäftlichen Kommunikation.

Charakteristische Merkmale der geschäftlichen Kommunikation: Gegenstand der geschäftlichen Kommunikation sind gemeinsame Angelegenheiten und die Haltung der Beteiligten dazu; der Bedarf an geschäftlicher Kommunikation ergibt sich aus der betrieblichen Notwendigkeit, Probleme zu lösen und Verhandlungen zu führen; die Motive für geschäftliche Kommunikation sind die Interessen der Sache; sprachliche Handlungen unterliegen festgelegten Verhaltensregeln und haben einen formal-rollenspezifischen, nicht persönlichen Charakter; das Ziel geschäftlicher Kommunikation ist die Lösung beruflicher und sozialer Aufgaben.

Die Geschäftskommunikation ist also eine spezifische Form der zwischenmenschlichen Interaktion, die auf festgelegten Normen basiert und auf die effektive Durchführung gemeinsamer Tätigkeiten ausgerichtet ist. Die Geschäftskommunikation ist Menschen eigen, die eine bestimmte berufliche Tätigkeit ausüben. Sie basiert auf allgemeinen sozialpsychologischen Gesetzmäßigkeiten und ist auf die erfolgreiche und effektive Erfüllung beruflicher Pflichten ausgerichtet. Sie umfasst den Austausch von Vorschlägen, Anforderungen, Ansichten und Motiven mit dem Ziel, konkrete Probleme zu lösen, Vereinbarungen zu unterzeichnen oder andere Beziehungen zwischen den Akteuren gemeinsamer Aktivitäten herzustellen.

M. Winograds'kyj, stellt fest, dass geschäftliche Kommunikation ein System subjektiver Beziehungen ist, das darauf abzielt, einen geschäftlichen Kommunikationsmodus auf der Grundlage von Interaktion und produktiver Zusammenarbeit zu schaffen, die zu gegenseitigem Verständnis führen [5].

Nach Ansicht von Ju. Gapon ist geschäftliche Kommunikation eine zwischenmenschliche Interaktion, die auf die Erreichung der Ziele beruflicher Tätigkeit im sozialpolitischen und sozioökonomischen Bereich ausgerichtet ist [4].

Es lässt sich feststellen, dass die Begriffe „berufliche Kommunikation" und „geschäftliche Kommunikation" synonym sind.

In einigen Studien wird der Begriff „kommunikative Interaktion" oder „Interaktion" bzw. „Geschäftskommunikation" als Synonym für den Begriff „berufliche Kommunikation" angesehen. Insbesondere ist die kommunikative Interaktion, wie O. Pindik feststellt, ein Bestandteil der Kommunikation und ihr Instrument, in deren Verlauf und als Ergebnis ein Austausch von Ideen und eine gegenseitige Bereicherung der Sprecher stattfindet [10].

Kommunikation ist nach Ansicht von V. Gryniova die Interaktion zwischen Menschen, deren Inhalt im Austausch von Informationen mithilfe verschiedener Kommunikationsmittel besteht, mit dem Ziel, Beziehungen zwischen Menschen aufzubauen [7].

Es ist anzumerken, dass G. Sagach geschäftliche Kommunikation als eine Form der Kommunikation definiert, die den Erfolg einer Angelegenheit sicherstellt und die notwendigen Voraussetzungen für die Zusammenarbeit von Menschen schafft, damit diese bestimmte Aufgaben erfüllen und die gesteckten Ziele erreichen können [1].

In der Studie von N. Volkova wird „berufliche Kommunikation" jedoch als ein weiter gefasster Begriff betrachtet als „beruflicher Austausch" [6].

Obwohl die Wissenschaftler die Notwendigkeit der Entwicklung kommunikativer Fähigkeiten und der Kommunikationsfähigkeit anerkannten, widmeten sie dem Prozess der Herausbildung einer Kommunikationskultur nicht genügend Aufmerksamkeit und ermittelten keine Wege zur Herausbildung einer Geschäftskultur bei zukünftigen Managern und Ökonomen. Uns sind keine Studien bekannt, in denen die Methodik dieses Prozesses begründet worden wäre.

Die wichtigsten Ansätze zur weiteren Lösung des Problems sind somit:

• die Begründung von Methoden zur Förderung der beruflichen Kommunikation bei Studierenden wirtschaftswissenschaftlicher Fachrichtungen;

• die Festlegung der psychologisch-pädagogischen Voraussetzungen für die Umsetzung dieser Methoden;

• die Lösung der Frage nach der wissenschaftlich-methodischen Absicherung des Lehr- und Erziehungsprozesses unter Einsatz moderner Lerntechnologien und des Internets;

• die Optimierung des Lehr- und Erziehungsprozesses an Hochschulen als Mittel zur Entwicklung des kreativen Potenzials zukünftiger Wirtschaftswissenschaftler.

Wir halten es für angebracht, eine Reihe von Eigenschaften und Kenntnissen aufzulisten, über die zukünftige Fachkräfte verfügen sollten: 1) Gesundheit und körperliche Kraft; 2) Intelligenz und klares Denken; 3) moralische Eigenschaften: besonnener Wille, Standhaftigkeit und Beharrlichkeit sowie, falls erforderlich, Mut und Verantwortungsbewusstsein; Pflichtbewusstsein und Sorge um das Gemeinwohl; 4) ein hohes Maß an Allgemeinbildung; 5) umfassende Beherrschung aller wesentlichen Funktionen" [5].

Wir halten es für notwendig zu betonen, dass einem angehenden Ökonomen mit einer ausgeprägten Kultur der beruflichen Kommunikation eine kognitive Aktivität eigen sein muss, deren Merkmale folgende sind:

- das Streben nach Wissen als wichtigster Antrieb für kognitive Aktivitäten;
- unmittelbares Interesse am Erkenntnisprozess;
- Selbstständigkeit, Verantwortungsbewusstsein und eine kreative Herangehensweise an die Lösung kognitiver Aufgaben;
- Beherrschung der Mittel kognitiver Tätigkeit, die Fähigkeit, selbstständig zu denken, das Wesentliche herauszuarbeiten und zu analysieren;
- das Streben nach Vertiefung und Erweiterung des Wissens sowie der Mittel zu dessen Aneignung;
- die Fähigkeit, das erworbene Wissen in der Praxis anzuwenden [10].

Für eine effektive berufliche Tätigkeit muss sich ein Wirtschaftswissenschaftler also ständig weiterentwickeln: Neues lernen, es herausarbeiten und analysieren sowie erfolgreich in der Arbeit anwenden.

E. Gerasimova, N. Zubareva, G. Chaika, T. Chmut und P. Fontaine haben nachgewiesen, dass für die praktische Ausbildung von Wirtschaftswissenschaftlern und für eine effektive partnerschaftliche Kommunikation eine Kommunikationskultur bzw. kommunikative Interaktion erforderlich ist, die die persönliche und berufliche Entwicklung des Menschen fördert.

Schlussfolgerungen. Zukünftige Fachkräfte im Bereich Wirtschaft sollten sich während ihres Studiums an einer Hochschule eine hohe Kultur aneignen, die eine Synthese aus nationaler, beruflicher und Unternehmenskultur sowie Kommunikations- und Führungskultur darstellt.

Wie die Analyse der Grundbegriffe zeigt, sind diese eng miteinander verbunden, und ihre Elemente greifen ineinander. Die Tätigkeit eines Wirtschaftswissenschaftlers weist besondere Merkmale auf: die Fähigkeit, mit Mitarbeitern zu arbeiten und Managemententscheidungen zu treffen, Fragen der wirtschaftlichen Beziehungen zu klären sowie Kontakte im Hinblick auf die internationale Zusammenarbeit zu knüpfen; die Bewältigung von Krisen und Problemen des Unternehmens sowie die Steigerung seiner Wettbewerbsfähigkeit auf dem internationalen Arbeits- und Dienstleistungsmarkt, was sich zweifellos auf die Kultur der Geschäftskommunikation auswirkt. Insbesondere stützen sich die Gesprächspartner bei der kommunikativen Interaktion auf die nationalen kulturellen Werte des Staates, in dessen Sprache die Kommunikation stattfindet, und berücksichtigen diese bei der Kontaktaufnahme.

Die Kommunikationskultur geht Hand in Hand mit einer hohen Führungskultur, ohne die der Erfolg der zukünftigen Ökonomen nicht möglich ist. Die geschäftliche Kommunikation ist auf das Erreichen der Endergebnisse wirtschaftlicher Aktivitäten sowie auf die Wiederbelebung und den Aufschwung der Wirtschaft ausgerichtet.

Es wurde festgestellt, dass der Inhalt der Kultur der beruflichen Kommunikation in der Verbindung von moralisch-ethischen Normen und universellen Werten besteht, die das Verhalten, die Beziehungen und die berufliche Tätigkeit im Produktionsbereich, bei Geschäftsverhandlungen, Präsentationen und beim Abschluss von Verträgen regeln; in der Fähigkeit, den Partner zu überzeugen und auf ihn einzuwirken, um ein positives Ergebnis der zwischenmenschlichen Interaktion zu erzielen; unter den Bedingungen der Marktwirtschaft Managemententscheidungen zu treffen, berufliche Aufgaben zu lösen und Kontakte zu Vertretern ausländischer Unternehmen zu knüpfen. Angesichts der Bedeutung der kommunikativen Funktion haben Wissenschaftler den Prozess der Entwicklung der Bereitschaft zur Geschäftskommunikation sowie der kommunikativen Fähigkeiten von Fachkräften mit wirtschaftlichem Profil untersucht.

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MANAGEMENT OF SPENT NUCLEAR FUEL AND RADIOACTIVE WASTE IN UKRAINE

Abstract.

Analysis of regulatory documents and legislative acts of Ukraine on the nuclear and radiation safety, related to the safety of spent nuclear fuel and radioactive waste management, is conducted. The important and topical issues regarding the radioactive waste management in Ukraine are reviewed. The main operating radioactive materials management facilities, as well as a list of activities and issues of national importance in the field of radioactive materials management that are planned to be resolved in the coming years are presented.

Keywords: spent nuclear fuel, radioactive waste, management, environment, nuclear safety, radiation safety.

Over the years of nuclear energy usage, the numerous methods for treatment and decontamination of radioactive materials have been proposed. However, the attempts to find a solution based on the experience gained show that a long-term strategy for the safe management of spent nuclear fuel and radioactive waste is more complex than it seemed before, and that this problem has not only a technological, but also a socio-ecological, economic and moral direction.

It is obvious that the development of methods for the radioactive materials management for the specific requirements must comply with the Ukrainian legislation, where the main law is the Law of Ukraine «On the Use of Nuclear Energy and Radiation Safety» [1]. All current laws on the nuclear safety are developed taking into account the international agreements ratified by Ukraine. Such as the Convention on the Assistance in the Case of a Nuclear Accident or Radiation Emergency (1987), the Convention on the Physical Protection of Nuclear Materials and Nuclear Facilities (1993), the Convention on the Nuclear Safety (1997) and the Joint Convention on the Safety of Spent Nuclear Fuel Management (2000). In addition, the Association Agreement between Ukraine and the European Union (2014) also included an agreement with the Euratom. Accordingly, the agreement stipulates Ukraine's obligation to implement the several Council of Europe/Euratom directives. For example, the Council Directive № 2011/70/Euratom of establishing a Community framework for the responsible and safe management of spent nuclear fuel and radioactive waste. As an active member of the International Atomic Energy Agency, Ukraine must comply with the relevant documents of this organization. In addition, there are various norms and rules in the field of nuclear energy usage and sanitary rules in the field of radiation safety ensuring, which were developed by the relevant supervisory authorities.

The radioactive materials management in Ukraine is a complex, multilayered process based on the detailed legislative and institutional framework. This system functions as a coordinated mechanism, where each element performs its unique role, from strategic planning at the state level to daily operations. The basis is not just a set of separate documents, but a holistic, hierarchically built architecture aimed at ensuring the long-term safety.

In terms of the radioactive waste volume, Ukraine ranks 2-nd in Europe and 4-th in the world (3.500.000 m^3).

The state entrusts the State Agency of Ukraine on Exclusion Zone Management with the important function of radioactive waste long-term storage and disposal. In accordance with this function, the activities of the State Environmental Inspectorate of Ukraine in this field are realized in the following directions:

management of spent sources of ionizing radiation and radioactive waste, coming from the medical, scientific, educational and industrial institutions;

management of radioactive waste, resulting from the Chornobyl disaster;

elimination of radiation accidents with the radioactive materials in illegal circulation.

Ukraine signed the Joint Convention on the Safety of Spent Nuclear Fuel Management and on the Safety of Radioactive Waste Management September 29, 1997 and was one of the first to ratify it by the Law of Ukraine of April 20, 2000. In accordance with the aforementioned convention, Ukraine has Radioactive Waste Management Strategy, which was adopted in 2009 and is designed for 50 years.

According to the Radioactive Waste Management Strategy, the radioactive waste generated during the use of nuclear energy must be transported to the Exclusion Zone at the Production Complex«Vector» for further long-term storage or disposal.

For implementing the tasks defined by the Radioactive Waste Management Strategy, the State Specialized Enterprise «Radon Association» has been created, which includes the special plants, the project organization State Enterprise «Scientific and Technical Center of Decontamination and Complex of Radioactive Waste Management, Substances and Ionizing Radiation Sources», an educational institution for training the personnel in the field of radioactive waste management, and the State Specialized Enterprise «Central Enterprise for the Management of Radioactive Waste», which is the only enterprise in Ukraine that has the right to radioactive waste disposal.

Special plants were established in 1960–1962, and the service areas were assigned to each special plant by the resolution of the Council of Ministers of the Ukrainian SSR № 377 dated December 21, 1990.

The State Specialized Enterprise «Radon Association» is also entrusted with the functions of maintaining the State Register of Radioactive Waste and the State Cadastre of Radioactive Waste Storage Facilities and Temporary Storage Sites.

For identify radioactive waste, ensure the control over their accumulation and movement, transfer to the special enterprises for disposal, use existing storage capacities, and ensure the constant updating and timely amendments to the State Register of Radioactive Waste and the State Cadastre of Radioactive Waste Storage Facilities and Temporary Storage Sites, the regular state inventories of radioactive waste and radioactive waste storages are realized. The state inventories of radioactive waste are realized every three years.

The main enterprise of the State Specialized Enterprise «Radon Association» is the State Specialized Enterprise «Central Enterprise for the Management of Radioactive Waste», which by the order of the Minister of Emergency Situations of Ukraine № 1086 dated December 9, 2010 «On Reforming the State Enterprises of the Exclusion Zone», was determined as the only national operating organization for radioactive waste management at the stage of long-term storage and disposal [2].

The State Specialized Enterprise «Central Enterprise for the Management of Radioactive Waste» is an operating organization (operator) at all stages of life cycle of Radioactive Waste Disposal Sites: «Buryakivka», «Pidlisnyi», «Chornobyl nuclear power plant Stage III» and 9 Radioactive Waste Interim Confinement Sites in the Exclusion Zone, which were formed in 1986–1987 when using the measures to decontaminate the Chornobyl nuclear power plant industrial site and the territory of the near Exclusion Zone [3].

The key task of the State Specialized Enterprise «Central Enterprise for the Management of Radioactive Waste» is to create the industrial complex for the decontamination, transportation, processing and disposal of radioactive waste (the Production Complex«Vector»).

The foundation of modern Radioactive Waste Management Strategy is a new radioactive waste classification system that meets the international safety standards [4]. It provides the division of waste into four main categories according to the level of activity: very low activity level waste, low activity level waste, intermediate activity level waste and high activity level waste. This approach is not just a technical update, but the key step in optimizing the entire system. It allows the application of differentiated methods of management and disposal, depending on the real level of danger. For example, the short-lived radioactive waste can be placed in the near-surface or surface repositories, while the long-lived radioactive waste requires disposal in the stable deep geological sites.

The low activity level waste and intermediate activity level waste – are the largest category of radioactive waste in terms of volume, which is generated during the operation and repair of nuclear power plants, in industry and medicine. The period of danger is relatively short. The sources of low activity level waste and intermediate activity level waste are diverse, but the main volume is generated by nuclear power. The effective processing allows significantly reducing the final volume for disposal.

The long-lived high activity level waste contains a large number of radionuclides with the long half-lives. This radioactive waste include spent nuclear fuel and processing products of spent nuclear fuel. The high activity level waste require the most reliable isolation from the biosphere for thousands of years, which is a major challenge for the long-term strategy.

Introduction of this classification has a significant economic effect, as allows significantly reducing the total cost of radioactive waste management. In the past, less hazardous waste could be stored according to the criteria for high activity level waste, which led to the unjustified costs. The improved classification makes it possible to place low activity level waste in the less expensive near-surface repositories, which according to the explanatory note to the relevant draft law, can reduce the cost of disposal by a factor of 10 without reducing the level of safety [4]. This rationalization is critically important in the long-term. Thus, this technical step is the basis for the economic efficiency of the entire Radioactive Waste Management Strategy.

The choice of disposal method depends on the activity level and half-life period of radionuclides, in particular the long-lived isotope ^{14}C.

Near-surface disposal. This method is suitable for low activity level waste and intermediate activity level waste. After proper conditioning and packaging, the radiation-hazardous materials are placed in the special engineering structures at a depth of up to several tens of meters. In Ukraine, the Production Complex «Vector» is operating in the Exclusion Zone for such materials.

Geological disposal. This is an internationally accepted standard for the long-lived high activity level radioactive materials. This method involves the locating of radiation-hazardous material in the stable geological formations at a depths ranging from hundreds of meters to several kilometers. A multibarrier system (engineered barriers and a natural geological barrier) ensures the reliable isolation of radioactive material from the biosphere for thousands of years. Ukraine is conducting the research on constructing its own geological repository, which in the long-term could become the final disposal site for high activity level radioactive materials. This project is extremely capital-intensive and time-consuming – its implementation could take decades. However, while the Centralized Storage Facility for Spent Nuclear Fuel solves the problem for 100 years, the deep geological repository is a solution for millennia.

Borehole disposal. This innovative approach considered as an alternative to traditional geological disposal. The radiation-hazardous materials are placed in the special capsules in deep (up to 5 km) vertical or inclined boreholes. The great depth and stability of the geological layers provide an extremely high level of isolation. This method can be cost-effective for small volumes of long-lived radioactive materials.

In the coming years, the following issues of national importance are planned to be addressed in the field of radioactive materials management:

construction of centralized storages for the disposal or long-term storage of radioactive waste at the Production Complex «Vector»;

continuation of the operation for near-surface storages at the Radioactive Waste Disposal Site «Buryakivka»;

commissioning of the Centralized Storage for Long-Term Storage of Spent Ionizing Radiation Sources;

completion of the construction for two near-surface storages for radioactive waste disposal: SRW-1, SRW-2 of the Production Complex«Vector»;

continuation of the design and construction of storage facility for vitrified high activity level waste from the spent nuclear fuel processing of the Ukrainian nuclear power plants;

implementation of projects for modernize and improve the safety of storage facilities, where radioactive waste was stored in the first years of the Chornobyl accident liquidation – the Radioactive Waste Disposal Site «Pidlisnyi» and the Radioactive Waste Disposal Site «Chornobyl nuclear power plant Stage III»;

continuation of the inspection for Radioactive Waste Interim Confinement Sites, substantiating their safety, as well removing the radioactive waste from the most dangerous locations;

implementation of measures for repurpose of Radioactive Waste Disposal Sites at the special enterprises of State Specialized Enterprise «Radon Association» and re-equip them into the Radioactive Waste Collection and Temporary Localization Points;

continuation of the maintenance, radiological examination and rendering the safe for Decontamination Waste Disposal Points and Special Transport Treatment Points that were formed during the work to eliminate the consequences of the accident outside the Exclusion Zone;

modernization of organizational and legal framework, as well completion of the creation for centralized infrastructure of radioactive waste management, namely

– establishment of the special industrial use zone on the territory of the Exclusion Zone and definition of its boundaries;

– establishment of the acceptance criteria for radioactive waste disposal in the storage facilities of the appropriate type;

– continuation of the development of storage facilities system for the disposal of radioactive waste from the operating Ukrainian nuclear power plants and the geological repository for the disposal of vitrified high activity level waste at the Production Complex«Vector».

The overall analysis indicates a significant prospect in the implementation of radioactive materials management in Ukraine. The key achievements include:

regulatory improvement: the adoption of a new classification of radioactive waste and constant updating of the legislative framework that meets international standards [4];

financial stability: the introduction of a sustainable financing mechanism through the State Fund for Radioactive Waste Management, ensuring the long-term viability of the program [5];

operational self-sufficiency: the successful launch of the Centralized Storage Facility for Spent Nuclear Fuel, which not only ensured energy independence from Russia, but also generates a significant economic effect that supports the further projects [6];

specialized expertize: the presence of specialized operators the National Nuclear Energy Generating Company «Energoatom» and the State Specialized Enterprise «Central Enterprise for the Management of Radioactive Waste» with clearly defined functions, which allows the effective management of waste various types [7].

However, there are some gaps in the radioactive materials management in Ukraine that need to be addressed immediately:

lack of final disposal: the biggest gap is the conceptual status of deep geological repository project for the final disposal of high activity level waste [8], long-term storage at the Centralized Storage Facility for Spent Nuclear Fuel is only a temporary solution;

uncertainty of retained radioactive waste: although there is a technological proposal from «Holtec», the issue for the final management of vitrified high activity level waste to be returned from Russia remains open [9];

impact of military operations: Russian aggression created a new, critical risk to nuclear security that requires the additional steps and international cooperation [10].

Based on the conducted analysis, to ensure the further successful development of radioactive materials management, it is recommended:

1. Political and technical level. Immediately intensify the process of developing and financing the deep geological repository project. This is a key strategic objective that cannot be postponed. It is also necessary to actively consider the possibility of adaptation for existing and licensed technologies to address the new, unforeseen challenges, such as the temporary storage of returned high activity level waste.

2. Financial level. Ensure the absolute transparency and efficiency in the usage of funds from the State Fund for Radioactive Waste Management, which will strengthen the trust of public and international partners.

3. Communication level. Integrate communication strategies and public dialogue as a mandatory element at all stages of planning and implementation, especially in the context of upcoming the deep geological repository project, which will require broad public support.

4. Safety level. Actively cooperate with the international partners and International Atomic Energy Agency to strengthen the physical protection of nuclear infrastructure objects and jointly counter military threats.

Conclusions

In Ukraine, the radioactive waste and spent nuclear fuel management is regulated by the Ukrainian legislation, including the Law of Ukraine «On the Use of Nuclear Energy and Radiation Safety». All current nuclear safety laws are implemented taking into account the international agreements ratified by Ukraine, as well International Atomic Energy Agency recommendations. Compliance with the international obligations is key aspect to ensure the highest safety standards and receiving the international support. Ukraine regularly submits the national reports to the International Atomic Energy Agency, demonstrating the transparency and readiness for international verification.

Thus, the «Radioactive Waste Management Strategy in Ukraine» together with the «National Targeted Environmental Program for Radioactive Waste Management» defines the key principles:

safety priority: ensuring the protection of personnel, the population and the environment at all stages of radioactive waste management;

phased implementation: radioactive waste management is being considered as the part of long-term decommissioning process of the Chornobyl nuclear power plant units, which is planned for decades;

conditioning and storage: before final disposal, the radioactive waste must be converted into a safe and stable form; this includes collection, sorting, fragmentation and packaging in the special containers;

interim storage: the current strategy for high-level and long-lived radioactive materials involves the long-term interim storage (50–100 years); this allows to reduce the levels of radioactivity and heat release through the natural decay of short-lived radionuclides, which simplifies and reduces the cost of subsequent operations.

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GORI SEMINARY ALUMNI AND THE NATIONAL-ROMANTIC STAGE IN AZERBAIJANI FOLKLORISTICS

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ВЫПУСКНИКИ ГОРИЙСКОЙ СЕМИНАРИИ И НАЦИОНАЛЬНО-РОМАНТИЧЕСКИЙ ЭТАП В АЗЕРБАЙДЖАНСКОЙ ФОЛЬКЛОРИСТИКЕ

Abstract.

The article explores the foundational "National-Romantic" stage in the development of Azerbaijani folkloristics, which occurred during the late 19th and early 20th centuries. This period is characterized by a shift from spontaneous folk appreciation to a systematic, scientific inquiry into the oral heritage of the Azerbaijani people. The primary intellectual engine behind this transformation was the Transcaucasian (Gori) Teachers' Seminary, specifically its Azerbaijani department. The study analyzes how the Seminary alumni-most notably Firidun bey Kocharli, Rashid bey Efendiyev, and Mahmud bey Mahmudbeyov-utilized folklore as a crucial tool for national awakening and pedagogical reform.

The research emphasizes three specific dimensions of their work: the conceptualization of proverbs and sayings as "distilled wisdom," the elevation of Ashiq poetry as the "rhythmic soul" of the nation, and the use of fairy tales to foster moral and civic values in children. The methodology used by these scholars was deeply rooted in the "Nature-Conforming" educational theories of European thinkers like Pestalozzi and Ushinsky, yet it remained uniquely adapted to the local socio-political context. By integrating folklore into the Vatan Dili (Mother Tongue) textbooks, the Gori alumni successfully moved the folk tradition from the peripheral village life into the formal academic and social discourse. The article concludes that this "National-Romantic" stage provided the structural and ideological bedrock for modern Azerbaijani folkloristics, effectively securing the nation’s cultural continuity and intellectual sovereignty during a period of rapid modernization and colonial pressure.

Аннотация.

Статья посвящена исследованию фундаментального «национально-романтического» этапа в становлении азербайджанской фольклористики в конце XIX — начале XX веков. Этот период характеризуется переходом от стихийного интереса к народному творчеству к систематическому научному изучению устного наследия азербайджанского народа. Основным интеллектуальным центром этой трансформации стала Закавказская (Горийская) учительская семинария, в частности её азербайджанское отделение. В работе анализируется, как выпускники семинарии - в первую очередь Фиридун-бек Кочарли, Рашид-бек Эфендиев и Махмуд-бек Махмудбеков - использовали фольклор как ключевой инструмент национального возрождения и педагогической реформы.

Особое внимание уделяется трем направлениям их деятельности: концептуализации пословиц и поговорок как «дистиллированной мудрости» народа, возведению ашугской поэзии в статус «ритмической души» нации и использованию сказок и легенд для формирования морально-этических ценностей у детей. Методология этих ученых опиралась на европейские педагогические теории (Песталоцци, Ушинский), но была адаптирована к местному социально-политическому контексту. Благодаря интеграции фольклора в учебники «Ватэн дили» («Родная речь»), горийцы успешно перенесли народные традиции из сельской среды в официальный академический и общественный дискурс. В статье делается вывод о том, что национально-романтический этап заложил структурный и идеологический фундамент современной азербайджанской фольклористики, обеспечив культурную преемственность и интеллектуальный суверенитет нации в условиях колониального давления.

Keywords: *Azerbaijani folkloristics, Gori teachers' seminary, national-romanticism, Firidun bey Kocharli, oral tradition, pedagogical methodology, ethnic identity, Vatan dili.*

Ключевые слова: *азербайджанская фольклористика, Горийская учительская семинария, национальный романтизм, Фиридун-бек Кочарли, устная традиция, педагогическая методология, этническая идентичность, Ватэн дили.*

Research methods. This study employs a combination of historical-comparative analysis, hermeneutics, and content analysis of primary sources to examine the methodological contributions of the Gori Teachers' Seminary alumni to the formation of Azerbaijani folkloristics.

1. Introduction

The development of folkloristics in Azerbaijan during the late 19th century was far more than a simple academic pursuit; it was a profound act of intellectual resistance and national self-assertion. At this critical juncture, Azerbaijan was navigating the complex cultural and political pressures of the Russian Empire, leading the local intelligentsia to realize that the survival of the national identity depended on reclaiming its indigenous roots. This gave rise to the "National-Romantic" movement, a period where scholars stopped viewing oral traditions as mere "peasant stories" and started treating them as the primary source of the *volksgeist*—the authentic spirit and historical memory of the people. This shift was heavily influenced by European Romanticism, which argued that a nation's true soul resides in its folk songs, myths, and language, rather than in the high-court literature of foreign-influenced elites.

The Transcaucasian (Gori) Teachers' Seminary emerged as the vital engine of this movement, particularly its Azerbaijani department. The seminary provided a unique environment where young intellectuals were exposed to modern European pedagogical theories-such as those of Pestalozzi and Ushinsky-which emphasized "nature-conforming" education and the use of the mother tongue. When alumni like Firidun bey Kocharli, Rashid bey Efendiyev, and Mahmud bey Mahmudbeyov returned to their communities, they applied these methods to the Azerbaijani context. They began a systematic "archaeology of the soul," traveling to rural villages to document dialects, proverbs, and legends that had never been written down. This was a departure from the sporadic, unorganized recordings of the past; it was a mission of "scholarly preservation" aimed at proving that Azerbaijani culture was ancient, self-sufficient, and intellectually deep.

Crucially, this movement was not just about archiving the past-it was about building the future. The data collected by the Gori alumni became the literal building blocks of a new national curriculum. By integrating folklore into the groundbreaking *Vatan Dili* (Mother Tongue) textbooks, they ensured that the next generation of Azerbaijanis would grow up learning the "distilled wisdom" of their ancestors. They used proverbs to teach ethics, folk songs to teach the rhythm of the language, and legends to foster a sense of civic heroism. In doing so, they moved folklore from the peripheral village fireside to the center of formal education, effectively bridging the gap between traditional heritage and modern national consciousness. This era established the methodological and ideological bedrock for Azerbaijani humanities, ensuring that as the nation modernized, it remained anchored in its own unique cultural soil.

2. The Gori Seminary as a Methodological Center

The emergence of Azerbaijani folkloristics as a formal scientific discipline was not a localized academic accident; it was a profound manifestation of the late 19th-century "National-Romantic" movement. "During this era, the Azerbaijani intelligentsia-many of whom were first-generation secular scholars-faced a critical identity crisis under the cultural and political pressures of the Russian Empire. The solution they proposed was a return to the *volksgeist*, or the "spirit of the people," which they believed was preserved in its purest, most uncorrupted form within oral traditions". [] At the heart of this intellectual revolution stood the Transcaucasian Teachers' Seminary in Gori. This institution served as more than a school; it was the primary crucible where European ethnographic methods were fused with a passionate, romantic commitment to national awakening.

The Gori alumni, including seminal figures such as Firidun bey Kocharli, Rashid bey Efendiyev, and Mahmud bey Mahmudbeyov, approached folklore with a sense of sacred duty. To them, a proverb was not just a clever saying, and a fairy tale was not merely a distraction for children; these were the "living fossils" of the Azerbaijani mind. "Their methodology was deeply influenced by the European romanticism of thinkers like Johann Gottfried von Herder, who argued that the true soul of a nation resides in its folk songs and myths. Consequently, the Seminary transformed its students into field researchers". [Сеидов, Ю. 1984: 73] Armed with the pedagogical theories of Pestalozzi and Ushinsky, these young men spent their summers in the remote villages of Shusha, Sheki, and Gazakh, documenting the speech, songs, and legends of the peasantry. This was the first time in Azerbaijani history that the "vernacular" was treated with the same scientific respect as the "classical."

Perhaps the most enduring legacy of this romantic stage was the integration of folklore into the nascent national education system. The *Vatan Dili* (Mother Tongue) textbooks, which became the cornerstone of Azerbaijani literacy, were essentially folkloric anthologies. By placing folk riddles and *bayatis* alongside modern scientific concepts, the Gori alumni effectively bridged the gap between a traditional past and a modernized future. "Firidun bey Kocharli, often cited as the father of Azerbaijani literary history, elevated this work to a higher theoretical plane by arguing that folklore was the essential precursor to all written literature". [Köçərli, F.2005, 52] He viewed the *Ashiq* poetry and heroic *Dastans* not as primitive relics, but as the foundational pillars of the Azerbaijani aesthetic identity". [Кочарлинский, Ф. 1903: 7] Ultimately, the "National-Romantic" stage was characterized by this dual mission: to save the nation's oral heritage from oblivion while simultaneously using that heritage to build a modern, self-aware national consciousness. Their work ensured that the Azerbaijani identity remained anchored in its own linguistic and mythological soil during a period of rapid and often destabilizing modernization.

The Gori Teachers' Seminary did not merely produce educators; it cultivated "cultural scouts" who understood that a modern nation could only be built upon its native linguistic and mythological foundations. “The curriculum, influenced by European pedagogical theories (such as those of Pestalozzi and Ushinsky), emphasized the importance of the mother tongue”. [Xəlil, A. 2015: 36]. This led to a massive effort to collect:

Proverbs and Sayings: As the "distilled wisdom" of the people.

Bayatis and Ashiq Poetry: Representing the rhythmic soul of the nation.

Fairy Tales and Legends: Used to foster moral values in children.

The concept of proverbs as "distilled wisdom" is the intellectual cornerstone of the National-Romantic stage in Azerbaijani folkloristics. For the graduates of the Gori Teachers' Seminary, these brief, rhythmic expressions were far more than linguistic ornaments; they were treated as the concentrated moral and philosophical DNA of the nation. In an era where the Azerbaijani identity was being squeezed between colonial pressures and external cultural influences, the Seminary alumni looked to the proverb (*atalar sözü*) as the ultimate proof of an indigenous, highly sophisticated world-view.

This "distillation" process was viewed as a natural filter of history. The National-Romantics argued that while an academic book might contain the thoughts of one man, a proverb contains the verified, survival-tested experience of millions over a thousand years. It is wisdom stripped of fluff-pure, functional, and irrefutable. “Figures like Firidun bey Kocharli and Rashid bey Efendiyev did not just collect these sayings; they used them as a "Moral Constitution" to counter the narrative that the common people were uneducated” [Əfəndiyev, R. 2006: 26]. By documenting how a simple peasant could express complex social truths about justice, labor, or family in a single sentence, they provided the scientific evidence needed to assert that Azerbaijani culture was ancient, self-sufficient, and deeply rooted in reason”. [Altstadt, A. L. 1992: 35]

In the classroom, this "distilled wisdom" became a revolutionary pedagogical tool. The *Vatan Dili* textbooks were designed around these aphorisms to ensure that a child's education was anchored in the native soil of their ancestors' logic. This was the essence of the National-Romantic mission: to take the "spirit of the people" found in the village and elevate it to the level of formal science, ensuring that the modernization of Azerbaijan would not come at the cost of its traditional intellectual heritage.

The conceptualization of Bayatis and Ashiq poetry as the "rhythmic soul of the nation" constitutes a vital pillar of the National-Romantic movement within Azerbaijani folkloristics. For the alumni of the Gori Teachers' Seminary, these genres were not merely entertaining relics of the past but were viewed as the emotional and melodic heartbeat of the Azerbaijani identity. While proverbs represented the "distilled wisdom" of the mind, the Bayati and the Ashiq verse represented the "unfiltered vibration" of the national spirit, capturing the profound depths of grief, love, and heroism that defined the people's history.

The "National-Romantic" scholars, particularly Firidun bey Kocharli, argued that the rhythmic structure of the Bayati-a seven-syllable, four-line poem-was the most natural expression of the Azerbaijani soul. They believed that this specific rhythm was encoded in the very landscape and language of the region. By systematically collecting these verses from the rural heartlands, the Gori graduates aimed to prove that the Azerbaijani peasantry possessed a sophisticated aesthetic sensibility that rivaled the high literary traditions of the East and West. They saw the Ashiq-the folk bard-as a "national philosopher" who carried the collective memory of the Oghuz Turkic ancestors through music and word.

In the pedagogical mission of the Seminary, Ashiq poetry served as a tool for linguistic purification and emotional education. The alumni recognized that the rhythmic and repetitive nature of these folk genres made them the perfect medium for preserving the purity of the Azerbaijani language against the heavy influx of Persian and Arabic vocabulary. In their eyes, the Ashiq’s *saz* was a sacred instrument that tuned the nation’s ear back to its own authentic voice. By elevating these folk songs to the level of academic study, the National-Romantics ensured that the modernization of Azerbaijan would not be a soul-less imitation of foreign models, but a rhythmic continuation of the nation's own ancient, lyrical heritage. This era effectively transformed the "lowly" folk song into a "high" symbol of national dignity and cultural continuity.

In the pedagogical vision of the Gori Seminary alumni, fairy tales and legends were far more than simple entertainment; they were regarded as the primary cultural machinery for the moral and civic education of children. This "National-Romantic" approach posited that a child’s conscience is best shaped not through abstract dictates, but through the vivid, archetypal imagery of folklore. Figures like Rashid bey Efendiyev and Sultan Majid Ganizade integrated these narratives into the early Azerbaijani school curriculum, believing that tales of heroism, sacrifice, and the triumph of justice were deeply embedded in the national "genetic memory." By using legends of local heroes and ancient mythological motifs, they sought to instill a sense of pride and social responsibility, framing the traditional "div" (giant) or "pahlavan" (hero) as symbols of the obstacles and virtues a modern citizen must navigate.

This methodology was a deliberate attempt to replace foreign instructional models with a "native psychology" that resonated with the local environment. These scholars argued that because legends are born from the soil, they carry the specific ethical nuances of the Azerbaijani people-concepts of hospitality, bravery, and communal loyalty-that translate more effectively into a child’s worldview than translated fables from distant cultures. Consequently, the collection of fairy tales during this period was a dual-purpose project: it was a scientific effort to preserve the nation’s oral art and a practical, romantic mission to cultivate a generation of "enlightened" Azerbaijanis who remained spiritually connected to their ancestral roots. Folklore, in this context, was the bridge that carried the ancient values of the village into the modern classroom, ensuring that the moral backbone of the nation remained intact during a time of immense social transition.

3. Key figures and their contributions

The "National-Romantic" stage of Azerbaijani folkloristics was not a faceless movement; it was a tapestry woven by specific visionary intellectuals who acted as the architects of a new national consciousness. These figures-graduates and teachers of the Gori Teachers' Seminary-moved beyond the role of mere educators to become "cultural archaeologists" and "national philosophers." Their contributions were diverse, yet they shared a singular, romantic mission: to rescue the Azerbaijani soul from the silence of history by documenting its oral traditions.

At the pinnacle of this movement stands Firidun bey Kocharli, arguably the most systematic and influential figure of the era. Kocharli's genius lay in his ability to transition folkloristics from a state of "unconscious collection" to "conscious scientific inquiry." In his seminal works, he argued that the history of a nation's literature cannot be understood without first mastering its folklore. He viewed the oral tradition not as a primitive precursor to "real" books, but as the very foundation upon which all high culture rests. Kocharli was particularly obsessed with the purity of the Azerbaijani language; he saw the peasant's speech, preserved in folk songs and riddles, as a standard of linguistic health. His documentation of Ashiq poetry was revolutionary because he treated these bards as the intellectual equals of classical poets, asserting that the *saz* and the *word* were the true guardians of the Turkic heritage. By classifying genres and identifying the historical layers within folk texts, Kocharli gave Azerbaijani folkloristics its first rigorous scientific framework.

Parallel to Kocharli was the tireless work of Rashid bey Efendiyev, whose contribution was uniquely functional and pedagogical. "R. Efendiyev understood that for folklore to survive, it had to be removed from the "museum" and placed back into the "classroom." He was a master of the educational application of folk materials. In his textbooks and articles, he emphasized that the moral upbringing of the Azerbaijani child must be rooted in the nation's own legends and fables. [] He was one of the first to argue for a "national psychology" in education, suggesting that a child learns honesty and bravery more effectively through a native legend about a local hero than through a translated foreign fable. Efendiyev's work was characterized by a deep, romantic empathy for the common people; he didn't just record their stories—he lived among them, validating their wisdom as the highest form of education.

"Then there is the contribution of Mahmud bey Mahmudbeyov, who focused heavily on the linguistic and structural beauty of the folk tradition. Along with his colleagues, he was instrumental in the creation of the *Vatan Dili* (Mother Tongue) series, which served as a de facto encyclopedia of Azerbaijani folklore". [Mahmudbəyov, M. 2010: 24] M. Mahmudbeyov's role was critical in the "standardization" of the folk text for a modern audience. He understood that to make folklore a pillar of national identity, it had to be presented in a way that was both accessible and aesthetically pleasing. He meticulously selected proverbs and short tales that reflected the "best" of the Azerbaijani character-hospitality, wit, and resilience.

Another vital figure often overlooked in the broad strokes of history is Sultan Majid Ganizade, who brought a sociological lens to the National-Romantic project. He viewed folklore as a living, breathing tool for social reform. "For S. Ganizade, collecting folk traditions was a way to reconnect the alienated city-dwelling intelligentsia with the rural masses. He believed that by celebrating the folklore of the village, the "upper classes" could learn the authentic values of the nation, thereby healing the social fractures of the time". [Sumbatzade, A. S. 1987: 35] His work was a romantic bridge between the classes, using the "common culture" of the folk tale to create a unified national front.

These figures did not work in isolation; they were part of a collective "Gori generation" that shared a specific methodological DNA. They all believed in the Volksgeist—the idea that a nation's true genius is found in its unwritten lore. Their contributions were characterized by a rejection of colonial cultural hegemony and a passionate embrace of the "authentic" Azerbaijani voice. They transformed the folklorist from a hobbyist into a national hero, someone who preserves the past to secure the future. Without the tireless field research and intellectual labor of Kocharli, Efendiyev, and their peers, the Azerbaijani identity might have entered the 20th century as a fragmented, purely oral culture. Instead, they ensured it entered the modern era as a documented, scientific, and profoundly proud national tradition. Their "National-Romantic" legacy remains the bedrock upon which all subsequent Azerbaijani humanities were built, proving that the rhythmic soul of the nation was, in fact, its greatest strength.

4. Characteristics of the National-Romantic Methodology

The National-Romantic methodology in Azerbaijani folkloristics was not merely a set of technical rules for collecting stories; it was a comprehensive intellectual and emotional framework that sought to redefine the nation's identity during a period of intense modernization and colonial pressure. "To understand this methodology, one must view it as a deliberate "scientific rebellion" led by the Gori Teachers' Seminary alumni. They moved away from the cold, detached observation of folk life and instead embraced a methodology built on the belief that the "folk soul" (*Volksgeist*) was the only authentic source of national survival". [Swietochowski, T. 2004: 58]

At the core of this methodology was the principle of Idealization as a Scientific Tool. The National-Romantics did not view the folklore of the Azerbaijani peasantry as a "primitive" relic to be discarded. Instead, they idealized the village as the purest site of Azerbaijani culture, untouched by the linguistic and cultural shifts that had altered the urban centers. Their methodology involved a dedicated effort to "uncover" the original Turkic essence beneath layers of historical influence. When a scholar like Firidun bey Kocharli documented a *Bayati* or a wedding chant, he wasn't just recording a song; he was using a methodology that treated that song as a "Golden Standard" for the national language and morality. They believed that by looking backward into the "heroic past" of the folk, they could find the blueprints for a modernized, independent future.

Another defining characteristic was Linguistic Purification. During this stage, the methodology was heavily focused on the "de-Persianization" and "de-Arabization" of the Azerbaijani literary language. “The Gori generation realized that the high literary language of the time was often inaccessible to the common person. Their methodology for collection was therefore focused on the *vernacular*. By systematically documenting proverbs and Ashiq poetry, they provided the raw materials for a new, standardized Azerbaijani language that was rooted in the speech of the people rather than the elites”. [Антология азербайджанского фольклора (Т. 1) 2001: 46] This was not just a linguistic preference; it was a sociopolitical strategy to unify a fragmented population under a single, recognizable cultural banner.

Furthermore, the methodology was characterized by Pedagogical Functionalism. “Unlike European folklorists who often collected tales for museums or archives, the Azerbaijani National-Romantics collected folklore to put it back into the hands of children. Their methodology for analyzing a folk tale was always framed by the question: "How does this build a national character?" [Касумов, С. 1988: 26] They sought out legends that emphasized hospitality, bravery, and communal justice-traits they deemed essential for a modern citizen. This led to the creation of the *Vatan Dili* textbooks, where folklore functioned as the primary ethical teacher. They believed that a child would learn honesty more effectively from a native legend than from a translated foreign fable because the native story resonated with the "rhythmic soul" of their own environment.

A final, critical characteristic was the Elevation of the Folk Bard (The Ashiq). The methodology of this period shifted the Ashiq from the periphery of society to the very center of national philosophy. “The National-Romantics treated the *saz* as a sacred instrument of memory. Their documentation process involved a deep respect for the oral performer as an intellectual peer. By identifying the Ashiq as the true "historian" of the people, they successfully challenged the colonial narrative that suggested Azerbaijanis had no written history or distinct high culture”. [Hüseynov, S. 2012: 68] The methodology proved that the history of Azerbaijan was written not in books, but in the rhythms and verses of its folk performers.

In summary, the National-Romantic methodology was a synthesis of emotional reverence and scientific rigor. It was a methodology of reclamation-reclaiming the language, the morals, and the history of a people from the shadows of neglect. It transformed the folklorist from a hobbyist into a guardian of the national spirit, ensuring that the modernization of Azerbaijan remained anchored in its own ancient and authentic traditions.

The "National-Romantic" stage in Azerbaijani folkloristics was defined by:

1. Idealization of the past: Viewing folk motifs as the purest form of national truth.
2. Linguistic purification: Using folklore to preserve the Azerbaijani language from excessive Persian and Arabic influences.
3. Pedagogical functionalism: The belief that oral traditions are the most effective tools for the moral and intellectual development of a child.

5. Conclusion

The conclusion of the National-Romantic stage in Azerbaijani folkloristics represents much more than a chronological end; it is the definitive synthesis of a generation's struggle to align ancient heritage with a modernizing national identity. To understand this era’s finality, one must view it as the successful transformation of "raw" oral tradition into a structured, scientific discipline that could withstand the turbulent political shifts of the 20th century. The alumni of the Gori Teachers' Seminary did not merely collect stories; they effectively "curated" the Azerbaijani soul, providing a documented foundation for a people who were previously defined by others through colonial or religious lenses. By the end of this stage, folklore had moved from the peripheral curiosity of village life to the very center of the national educational and literary discourse.

The most enduring achievement of this period was the institutionalization of the "National-Romantic" methodology, which prioritized the search for the *Volksgeist*-the unique national spirit. This conclusion serves as a testament to the fact that the modernization of Azerbaijan was not a process of discarding the past, but of reclaiming it. The work of Firidun bey Kocharli, Rashid bey Efendiyev, and their peers proved that the Azerbaijani language, far from being a "peasant dialect," possessed a sophisticated philosophical depth and a rhythmic beauty that rivaled any written tradition. Their systematic recording of proverbs as "distilled wisdom," Bayatis as the "rhythmic soul," and fairy tales as "moral anchors" created a cultural shield that preserved the nation's core during the subsequent Soviet ideological shifts.

Ultimately, the conclusion of this stage signifies the birth of a modern "intellectual sovereignty." The Gori generation provided the first indigenous scientific framework for studying Azerbaijani culture, ensuring that the nation would henceforth be the primary narrator of its own history. They proved that folklore was not a static relic of a dead past, but a living, breathing asset that provided the moral and aesthetic compass for a nation in transition. As this era closed, it left behind a legacy where the *Ashiq's* song and the grandmother’s tale were no longer just echoes in a village, but were recognized as the fundamental pillars of the Azerbaijani state and spirit. This period effectively bridged the gap between the archaic and the modern, turning the "National-Romantic" dream into a concrete, scientific reality that continues to inform Azerbaijani scholarship today.

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THE THEORETICAL AND HISTORICAL FOUNDATIONS OF ECOPOETICS: BASED ON AMERICAN AND AZERBAIJANI LITERATURE

Abstract

This article examines the theoretical and historical foundations of ecocriticism as a methodological approach within literary studies. The inquiry traces the emergence and institutional consolidation of ecocriticism from its roots in the American nature writing tradition — embodied by Thoreau, Muir, and Leopold — through its formal academic crystallization in the landmark anthology compiled by Glotfelty and Fromm (1996). Particular attention is devoted to the key theoretical concepts that constitute the analytical architecture of ecopoetics: biocentrism, sense of place, the wild, and ecological imperialism. The article further investigates the distinctive ecological philosophy embedded in the Beat Generation's literary practice, with a sustained focus on Gary Snyder's synthesis of Zen Buddhism, Native American cosmology, Japanese haiku minimalism, and bioregionalism. A parallel theoretical strand examines the codes of land imagery in Azerbaijani lyric poetry, demonstrating how ecological consciousness in the work of Mammad Araz operates simultaneously across physical, ethno-national, and archetypal registers. The article contends that ecocritical methodology — hitherto applied predominantly to Anglo-American texts — possesses genuine universal applicability and opens productive new avenues for the study of Azerbaijani literature. The findings establish a principled comparative ecopoetic framework for future cross-cultural scholarship, contributing both to Azerbaijani literary studies and to the broader global expansion of ecocritical theory.

Keywords: *ecocriticism, ecopoetics, comparative literature, Beat Generation, Gary Snyder, Azerbaijani lyric poetry, sense of place, bioregionalism, land imagery, Mammad Araz*

1. Introduction

Ecocriticism is, by the standards of literary scholarship, a relatively young discipline — yet one that draws upon profoundly deep historical and philosophical roots. Its formal academic history may be dated to 1992, when Cheryll Glotfelty delivered her presidential address to the Western Literature Association, but its intellectual and spiritual genealogy reaches back much further: to the mid-nineteenth century, to the earliest and most enduring monuments of American nature writing. Henry David Thoreau's retreat into the woods at Walden Pond (1854), John Muir's impassioned campaigns for the preservation of the Sierra Nevada, and Aldo Leopold's articulation of a "land ethic" in A Sand County Almanac (1949) — these are the artistic and philosophical precursors from which the ecocritical tradition ultimately springs.

In the contemporary world, the damage that industrial civilization has inflicted upon ecosystems has unsettled not merely the physical environment but the very poetic and philosophical foundations upon which the human relationship with land has historically rested. Against this backdrop, ecocriticism calls upon literary scholars to re-read literary texts as representations, archives, and philosophies of the human-ecosystem relationship. The purpose of this article is threefold: to examine the theoretical and historical foundations of ecocriticism as a methodology; to identify and clarify its central conceptual categories; and to construct a theoretical framework suitable for a comparative ecopoetic analysis of the work of Gary Snyder and Mammad Araz.

2. Ecocriticism: historical development and core concepts.

As a recognized scholarly methodology, ecocriticism was institutionalized in 1996 with the publication of The Ecocriticism Reader, the influential anthology edited by Glotfelty and Fromm. In that volume, Glotfelty defines the field as "the study of the relationship between literature and the physical environment" [3]. This definition marks a radical epistemological shift: literary studies formally expanded its domain to include the biological situatedness of human existence on earth.

Several core concepts occupy central positions in the development of ecocritical thought. Biocentrism offers an alternative to anthropocentric worldviews by affirming that all living beings are equal participants in a broader ecological whole — that the human is not the measure of all things, but one constituent among many in a web of interdependent life. The concept of sense of place captures the deep bond that forms between a person and a specific geographical location — a bond that is not merely aesthetic pleasure but a convergence of historical memory, biological dependency, cultural identity, and the felt sense of home. Lawrence Buell refines this notion through the term "place-attachment" [1], emphasizing the affective and psychological dimensions of such bonds. The concept of the wild, perhaps Gary Snyder's most significant theoretical contribution, is developed in his 1990 essay collection The Practice of the Wild, where Snyder defines it as a force that is "self-organizing" and independent of human will [9].

In subsequent decades, Timothy Morton's concept of "dark ecology" [5], Val Plumwood's ecofeminist approach [7], and Rob Nixon's theorization of "slow violence" have deepened and complicated this conceptual architecture in important ways. Nevertheless, these developments have remained largely anchored in the Anglo-American literary tradition; non-Western literatures — including Azerbaijani lyric poetry — have remained, for the most part, outside the ecocritical field of vision.

3. The ecology of the beat generation: snyder's distinctive position.

What most sharply distinguishes Gary Snyder from his major contemporaries within the Beat Generation — Ginsberg, Kerouac, Ferlinghetti — is that he grounds his critique of urban, industrial civilization not merely in social and political terms but in a deep ecological and philosophical framework. This difference transforms Snyder, from within the Beat movement itself, into something closer to an ecological theorist in verse.

The sources of Snyder's ecopoetics converge in four major currents. The first is Buddhism, and in particular Zen: between 1956 and 1968, Snyder undertook sustained practice at Rinzai Zen monasteries in Japan. The Buddhist principle of anicca — the impermanence of all things — provides the philosophical bedrock for the ecological cyclicality that runs through his poetry. The second current is Native American cosmology: in the worldviews of indigenous peoples, the land, the animal, the plant, the mountain are each forms of sacred being, not resources to be extracted or landscapes to be aestheticized. The third current is the Japanese haiku tradition: the minimalist poetic language of Bashō, Buson, and Issa became a structural principle of Snyder's own poetics, his way of attending closely and economically to the non-human world. The fourth current is bioregionalism: Snyder advances the idea that human governance and cultural self-expression ought to be organized not around administrative-political boundaries but around ecological territorial units [6].

The synthesis of these four streams carries Snyder well beyond the conventional aesthetic boundaries of American poetry. His poems are written from within the biological system — from inside the forest, the mountain, the river — rather than from the vantage point of a human observer contemplating nature at a safe remove. They give voice not to the human surveying the ecosystem, but to the human immersed within it [8].

4. The code of land imagery in Azerbaijani lyric poetry.

The image of land occupies a central and enduring position in Azerbaijani lyric poetry. It functions not merely as a geographical or descriptive element, but as a condensed symbolic structure shaped by layers of cultural memory, historical experience, political consciousness, and archetypal imagination. In this sense, land (torpaq) may be understood as a poetic code through which successive generations of poets have articulated changing conceptions of homeland, identity, spirituality, and human belonging. Without recognizing this multilayered semantic tradition, it is impossible to interpret adequately the land imagery in the poetry of Mammad Araz. His poetic treatment of land emerges not in isolation, but from within a long-established literary continuum that he simultaneously inherits and transforms.

The symbolic expression of ideas in poetry frequently embodies philosophical and intellectual meanings that transcend literal reference. Concrete images become vehicles of abstraction, allowing poets to convert visible reality into deeper systems of signification. The artistic representation of reality therefore depends on the poet's capacity for philosophical generalization, metaphorical thinking, and imaginative extrapolation. Through symbolic logic, the lyrical imagination reinterprets material objects as carriers of collective, emotional, and existential truth. As G. Guliyev observes, the artist possesses the ability to comprehend reality not only in its present condition, but also in relation to its past and future developmental trajectory [17, p. 327]. This observation is particularly relevant to Azerbaijani poetry, where the image of land consistently exceeds its physical boundaries and becomes a medium of historical consciousness.

Viewed from the perspective of classical Azerbaijani poetry, land has undergone multiple symbolic transformations. In the poetry of Fuzuli, land often appears as the material veil of divine beauty, the earthly surface through which metaphysical longing is expressed. In Molla Panah Vagif, by contrast, land becomes associated with realism, sensual vitality, and the sweetness of lived existence. In the satirical works of Mirza Alakbar Sabir, it acquires a political function, symbolizing resistance to oppression, occupation, and moral degradation. Thus, even before the twentieth century, the land image had already accumulated theological, emotional, and national dimensions [14].

As Azerbaijani poetry entered the modern era, these meanings continued to evolve. In the works of Huseyn Javid, land often appears as the violated homeland, the space where ideals are destroyed and where the nation burns "within fire." In Ahmad Javad, land becomes inseparable from sacrifice and martyrdom—the sacred homeland for which one walks willingly toward execution. In the modernist poetics of Rasul Rza, land is transformed once more into an abstract source of warmth enclosed within the cold crystal of intellectual reflection. These examples demonstrate that land imagery in Azerbaijani poetry is dynamic rather than static; each literary epoch reinscribes the symbol with new historical meanings.

Mammad Araz enters this tradition while adding a distinctly original semantic layer: an ecological-political cipher. Under Soviet censorship, any explicit invocation of homeland or national attachment could be interpreted as an attempt to awaken patriotic feeling and therefore as politically dangerous. Open references to territorial belonging risked limiting publication or provoking ideological suspicion. Araz responded to this constraint through poetic indirection. Rather than addressing homeland solely through overt patriotic rhetoric, he displaced his attachment to land, mountain, river, and forest into the language of ecological love. This strategy enabled him to preserve national meaning beneath the surface of nature poetry. The Soviet ideological apparatus could prohibit direct nationalism more easily than reverence for soil, labor, or rural life, since socialist realism itself glorified agricultural productivity, the dignity of labor, and closeness to the land [12; 13].

Consequently, in Araz's poetry a handful of soil may simultaneously signify ecological sensitivity, national memory, and political resistance. What appears at first glance to be landscape description often functions as encoded civic speech. Mountains symbolize permanence and endurance; rivers suggest continuity of collective life; forests evoke threatened organic wholeness; and land itself becomes the silent witness of historical injustice. Through this multilayered symbolism, Araz transforms natural imagery into a discourse of ethical and national survival.

Within this context, three concentric semantic layers may be identified in the code of land imagery in Azerbaijani lyric poetry. The first layer is the physical ecosystem. Here land refers to tangible geography and biological reality: the Kura-Aras plain, the uplands of Karabakh, the Caspian shore, Mount Murov, cultivated fields, springs, stones, and seasonal cycles. These are not abstract metaphors alone, but concrete environments inhabited, cultivated, and sensorially experienced. The natural world enters poetry through texture, climate, smell, fertility, drought, erosion, and landscape memory.

The second layer is national identity. Land signifies the historical continuity of the Azerbaijani people, the inheritance received from ancestors, and the foundation entrusted to future generations. In this register, land is not passive territory but the repository of memory—marked by battles, migrations, songs, graves, ruins, and collective endurance. To lose land is therefore not only to lose geography, but also to risk severance from historical selfhood. This explains why the image of land repeatedly emerges in Azerbaijani poetry during moments of crisis, occupation, displacement, or political struggle.

The third layer is the archetypal maternal principle. In many poetic traditions, including the Azerbaijani one, land is feminized as mother: nurturing, fertile, patient, wounded, and forgiving. It is the first hearth from which one emerges, the source for which one longs in exile, and the final resting place to which one returns in death. This maternal symbolism intensifies emotional attachment to homeland by translating political geography into intimate kinship. The land is not simply owned; it is loved, mourned, and remembered as a living origin.

In the poetry of Mammad Araz, these three layers are inseparable. Physical geography becomes historical destiny; national memory is experienced through rivers, stones, and mountains; maternal archetype fuses with ecological belonging. To isolate one layer from the others is to misread the text incompletely. Araz's originality lies precisely in his ability to maintain all three dimensions simultaneously, allowing land to speak as ecosystem, homeland, and mother at once. Through this synthesis, he renews one of the oldest symbols of Azerbaijani poetry and adapts it to the intellectual, ecological, and political anxieties of the twentieth century [14].

5. Comparative ecopoetics: methodological principles.

When undertaking comparative analysis of ecopoetic texts from different cultural traditions, adherence to a set of methodological principles becomes essential.

The first principle is the separation of universal from culture-specific layers: any given ecopoetic image must be read simultaneously for what it shares with all human cultures and for what belongs uniquely to the specific cultural tradition that produced it. The second principle requires attention to the geographical determinants of poetic language: Snyder's poetic idiom is shaped by the granite landscape of the Sierra Nevada, while Mammad Araz's is shaped by the highland plateaus of Karabakh — and this shaping is not incidental but constitutive [14]. The third principle involves assessing the influence of political context on ecological reading: writing in conditions of relative freedom, Snyder can express his ecological protest directly and openly; writing under censorship, Mammad Araz encodes his ecological-national message in an allusive, allegorical language that demands a different kind of interpretive attention.

This methodological framework enables the research to operate simultaneously on the planes of literary scholarship, ecological philosophy, and comparative cultural analysis. The juxtaposition of Snyder and Araz serves as a test case for the productivity of applying ecocritical principles to non-Western literary traditions [2].

6. Conclusion

This study has shown that ecocriticism should not be regarded as a theory limited only to Anglo-American literature. On the contrary, it offers a broad and dynamic methodological framework capable of interpreting literary traditions shaped in different historical, cultural, and political environments. Concepts such as biocentrism, sense of place, the wild, and land ethics reveal their true value precisely when applied comparatively across cultures. In this sense, ecopoetics becomes not simply a branch of literary criticism, but a meaningful way of understanding how humanity has imagined its relationship with nature through language and art.

The comparative reading of Gary Snyder and Mammad Araz confirms that ecological consciousness may emerge through different cultural routes while expressing similar spiritual and ethical concerns. In Snyder's poetry, nature is approached through Zen philosophy, Indigenous cosmologies, and bioregional thinking; in Mammad Araz's verse, natural imagery is deeply connected with homeland, memory, historical endurance, and the emotional bond between people and land. Although they belong to distant literary worlds, both poets treat nature not as decorative background, but as a living presence that shapes identity, morality, and collective destiny.

This comparison also suggests that Azerbaijani literature possesses rich and largely unexplored possibilities for ecocritical scholarship. The symbolic language of land, mountain, river, and soil in Azerbaijani poetry reflects a deep cultural ecology formed through centuries of historical experience. Bringing such texts into global ecocritical discussion would not only broaden the field geographically, but would also enrich it conceptually by introducing perspectives shaped by memory, displacement, resilience, and national belonging.

Ultimately, the dialogue between Snyder and Araz demonstrates that literature can build bridges where geography and history create distance. Different poetic traditions often meet in their shared concern for place, survival, dignity, and harmony with the living world. At a time when ecological crisis has become one of the defining realities of the modern age, such comparative studies gain particular importance. They remind us that poetry does more than describe nature—it preserves humanity's ethical imagination of how to live within it.

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MULTIDISCIPLINARY DIALOGUE IN MODERN TURKOLOGY

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МЕЖДИСЦИПЛИНАРНЫЙ ДИАЛОГ В СОВРЕМЕННОЙ ТЮРКОЛОГИИ

Abstract.

The present article is devoted to a systematic theoretical and methodological investigation of contemporary linguistic issues in modern Turkology. The study aims to analyze the morphosyntactic structure, semantic organization, and functional characteristics of Turkic languages within a comparative-theoretical framework in order to identify their developmental tendencies. Processes of globalization, intensive language contact, and digital communication have led to observable transformations in the structural and semantic systems of Turkic languages. These transformations are particularly reflected in the modification of grammatical patterns, lexical renewal, and the functional expansion of discourse practices.

The research is grounded in comparative-historical methodology, structural-semantic analysis, and functional-pragmatic approaches. Furthermore, the establishment of multidisciplinary scientific dialogue in Turkology and the strengthening of academic cooperation among Turkic-speaking communities are substantiated as essential conditions for the conceptual and institutional advancement of the field. The identification of common research directions enables a more objective evaluation of the typological features of Turkic languages.

The scientifically grounded assessment of contemporary challenges in Turkic languages requires an integrative and theoretically substantiated approach. Such a framework contributes both to the enrichment of general linguistic theory and to defining the future developmental perspectives of Turkology.

Аннотация.

Настоящая статья посвящена системному теоретико-методологическому исследованию актуальных лингвистических проблем современной тюркологии. Целью исследования является анализ морфосинтаксической структуры, семантической организации и функциональных характеристик тюркских языков в рамках сравнительно-теоретического подхода с целью выявления тенденций их развития. Процессы глобализации, интенсивные языковые контакты и цифровая коммуникация привели к заметным трансформациям в структурных и семантических системах тюркских языков. Эти изменения особенно проявляются в модификации грамматических моделей, обновлении лексического состава и расширении функциональных возможностей дискурсивных практик.

Исследование основано на сравнительно-историческом методе, структурно-семантическом анализе и функционально-прагматических подходах. Кроме того, обосновывается необходимость формирования междисциплинарного научного диалога в тюркологии и укрепления академического сотрудничества между тюркоязычными сообществами как важнейших условий концептуального и институционального развития данной области. Выявление общих направлений исследований позволяет более объективно оценить типологические особенности тюркских языков.

Научно обоснованная оценка современных вызовов, стоящих перед тюркскими языками, требует интегративного и теоретически выверенного подхода. Такой подход способствует как обогащению общей лингвистической теории, так и определению перспектив дальнейшего развития тюркологии.

Keywords: *Turkology, Turkic languages, comparative linguistics, morphosyntax, interdisciplinary research*
Ключевые слова: *тюркология, тюркские языки, сравнительное языкознание, морфосинтаксис, междисциплинарные исследования.*

Introduction. Turkology constitutes a well-established and dynamically developing branch of contemporary linguistic science, situated at the intersection of comparative-historical, structural, and typological research traditions. The Turkic languages, distinguished by their agglutinative morphological structure, vowel harmony, and relatively transparent morphosyntactic organization, represent a typologically significant language family that provides substantial empirical material for testing and refining general linguistic theory. In recent decades, the scope of Turkic studies has expanded considerably, incorporating theoretical, functional, cognitive, and discourse-oriented approaches alongside classical philological and historical investigations.

Within the broader context of globalization, intensified interlinguistic contact, and digital communication, Turkic languages are experiencing both systemic and functional transformations. These changes are manifested in morphosyntactic restructuring, lexical borrowing and innovation, terminological modernization, and evolving discourse practices. Such processes call for a rigorous and theoretically grounded reassessment of traditional descriptive models and demand the development of integrative analytical frameworks capable of accounting for both stability and change within the Turkic linguistic system.

At the same time, the internal diversity of the Turkic language family creates favorable conditions for comparative and typological generalization. The identification of shared structural patterns and language-specific divergences contributes to a more precise understanding of agglutinative typology and grammaticalization processes. In this regard, the establishment of multidisciplinary scientific dialogue and the strengthening of academic cooperation among Turkic-speaking scholarly communities emerge as essential prerequisites for the conceptual consolidation and methodological advancement of modern Turkology.

Against this theoretical and institutional background, the present study seeks to examine contemporary linguistic challenges in Turkic languages and to evaluate their developmental trajectories within a coherent and academically substantiated framework.

Contemporary Trends and Challenges in Turkic Linguistics

The field of contemporary Turkic linguistics has experienced profound transformations over the past few decades, moving beyond the limitations of traditional descriptive and comparative-historical approaches toward theoretically and methodologically sophisticated research paradigms. Classical studies primarily emphasized phonological correspondences and diachronic reconstruction, often neglecting the functional and pragmatic dimensions of Turkic languages. However, modern investigations increasingly focus on morphosyntactic structures, semantic organization, and discourse-functional dynamics within Turkic linguistic systems, reflecting a holistic understanding of language as both a cognitive and social phenomenon [5,394].

A central area of contemporary research concerns morphosyntactic variation within the inherently agglutinative Turkic languages. Agglutination has long been considered a typological hallmark of Turkic systems, but recent studies demonstrate processes of grammatical restructuring, functional reanalysis, and cliticization, challenging previous assumptions of structural invariability [6, 346]. For example, modifications in case marking and possessive constructions reveal the dynamic interaction between inherited grammatical schemas and innovative usage patterns shaped by sociolinguistic factors [6, 342; 7, 368]. Such phenomena necessitate a re-evaluation of classical categorial distinctions, encouraging theoretically informed interpretations grounded in comparative and functional frameworks [1, 215].

Lexical modernization and terminological standardization constitute another critical dimension of contemporary Turkology. In the context of globalization and rapid technological development, Turkic languages exhibit dynamic integration of international terminology alongside endogenous word-formation processes [1, 214–216]. This tension between borrowing and native derivational mechanisms foregrounds issues of language planning, corpus development, and normative regulation. Functionally, lexical innovation facilitates domain expansion, particularly in academic, digital, and institutional registers, thereby allowing Turkic languages to adapt to modern communicative needs.

Discourse-oriented approaches further illuminate transformations in communicative strategies and pragmatic structuring. Digital and social media platforms influence hybrid discourse forms, shifts in politeness conventions, and the reconfiguration of textual cohesion strategies. Consequently, a purely structural analysis is insufficient; instead, an integrative framework incorporating functional-pragmatic dimensions is required to accurately describe contemporary linguistic realities [7, 59]. As pragmatically observed in communicative interaction, politeness strategies are closely linked to social norms and contextualized discourse behavior [8, 3].

In response to these complex dynamics, multidisciplinary scientific dialogue has emerged as both a methodological imperative and an institutional objective. Integrating comparative typology, corpus linguistics, sociolinguistics, and cognitive approaches enables a comprehensive understanding of Turkic linguistic processes [5, 398; 3, 312]. Establishing shared research agendas among Turkic-speaking scholarly communities strengthens conceptual coherence and enhances the international visibility of Turkology as a theoretical discipline [5, 399].

The current trajectory of Turkology is therefore characterized by theoretical diversification, methodological integration, and intensified academic collaboration. This multidimensional orientation allows scholars to analyze the internal structural dynamics and functional patterns of Turkic languages while also situating them within broader typological, historical, and comparative frameworks [4, 486]. It provides a basis for examining the interaction between inherited grammatical structures and emerging linguistic innovations, including processes of lexical modernization, syntactic restructuring, and pragmatic adaptation across both spoken and written registers [4, 485].

Moreover, integrating these diverse analytical dimensions enables the systematic evaluation of the complex interrelations between structural stability and functional change in Turkic languages. Such an approach informs practical applications in language planning, educational policy, corpus development, and digital communication [5, 398; 1, 214]. Additionally, it fosters an academic environment conducive to collaborative research, the sharing of methodological tools, and harmonization of research agendas across Turkic-speaking scholarly communities, thereby reinforcing both conceptual coherence and international recognition of Turkology [1, 214; 5, 398].

Ultimately, the integration of theoretical diversification, methodological sophistication, and collaborative research positions modern Turkology as a scientifically robust, globally relevant field capable of addressing the internal complexities of Turkic languages while contributing meaningfully to general and comparative linguistic studies. By systematically investigating grammatical restructuring, lexical innovation, discourse-functional dynamics, and terminological standardization, scholars can generate evidence-based insights applicable to language planning, educational strategies, and corpus development [7, 368; 8, 57–81]. This orientation ensures that the study of Turkic languages remains responsive to both linguistic evolution and socio-cultural transformation, providing a foundation for informed decision-making in language policy and pedagogy [4, 487]. As noted, politeness in language functions as a pragmatic and culturally conditioned mechanism that regulates interpersonal communication and reflects social norms [8, 3].

Conclusion. The present study illustrates that contemporary Turkic linguistics has undergone significant evolution, moving beyond traditional descriptive and comparative-historical approaches toward theoretically and methodologically integrated frameworks. The examination of morphosyntactic structures reveals that, despite the inherent agglutinative character of Turkic languages, ongoing transformations in case marking, possessive constructions, and grammatical functions reflect adaptive processes shaped by internal developments and communicative needs. Similarly, lexical innovation demonstrates the languages' responsiveness to modernization, digitalization, and cross-linguistic contact, highlighting the dynamic balance between traditional derivational systems and the incorporation of new terminology.

Discourse-functional analysis further underscores the shifting nature of pragmatic strategies, textual cohesion, and communicative norms, particularly in digital and institutional contexts. These changes illustrate that a purely structural approach is insufficient to capture the full complexity of contemporary Turkic linguistic processes. Instead, integrative perspectives that combine morphosyntactic, semantic, and functional-pragmatic dimensions are essential for a comprehensive understanding of language evolution and usage.

Moreover, the importance of multidisciplinary research and scholarly collaboration cannot be overstated. Cooperative efforts among Turkic-speaking researchers provide opportunities to align methodological approaches, define common research agendas, and foster conceptual consistency across the field. Such collaboration enhances the analytical capacity of Turkology, supports empirical validation of theoretical models, and promotes the international visibility and recognition of the discipline.

In conclusion, modern Turkology is marked by theoretical diversification, methodological sophistication, and intensified academic cooperation. These developments collectively enable systematic assessment of contemporary linguistic challenges and facilitate evidence-based projections regarding the future trajectories of Turkic languages. Continued integrative research, attentive to structural, functional, and sociocultural dimensions, remains vital for advancing the field and ensuring that Turkic linguistics maintains both scientific rigor and relevance within global linguistic scholarship.

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SYNTACTIC FUNCTIONS OF VERB PHRASES EXPRESSING DIRECTION IN ENGLISH AND AZERBAIJANI

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СИНТАКСИЧЕСКИЕ ФУНКЦИИ ГЛАГОЛЬНЫХ СЛОВОСОЧЕТАНИЙ, ВЫРАЖАЮЩИХ НАПРАВЛЕНИЕ ДЕЙСТВИЯ В АНГЛИЙСКОМ И АЗЕРБАЙДЖАНСКОМ ЯЗЫКАХ

Abstract.

This study examines the syntactic functions of verb phrases expressing the direction of an action in English and Azerbaijani within a comparative framework. The research focuses on verb phrases formed on the basis of non-finite verb forms, including the infinitive, participle, converb, and gerund, and analyzes their structural and functional properties in both languages. Particular attention is paid to the ways in which these constructions perform various syntactic roles, such as subject, object, attribute, predicative, and different types of adverbials.

The analysis reveals that, despite differences in the morphological richness and formal characteristics of non-finite verb forms—especially the broader and more diverse system found in Azerbaijani—the syntactic functions of verb phrases expressing directional meaning largely coincide in both languages. At the same time, the study demonstrates that converbial constructions in Azerbaijani exhibit greater functional flexibility due to their rich semantic and morphological structure.

The findings contribute to a deeper understanding of the interaction between form and function in non-finite verb constructions and highlight both typological similarities and language-specific features in the expression of directional action.

Аннотация.

В данной статье в сравнительном аспекте рассматриваются синтаксические функции глагольных словосочетаний, выражающих направление действия, в английском и азербайджанском языках. Исследование сосредоточено на глагольных словосочетаниях, образованных на основе неличных форм глагола, включая инфинитив, причастие, деепричастие и герундий, а также анализирует их структурные и функциональные свойства в обоих языках. Особое внимание уделяется тому, каким образом данные конструкции выполняют различные синтаксические функции, такие как подлежащее, дополнение, определение, именная часть сказуемого и различные виды обстоятельств.

Анализ показывает, что, несмотря на различия в морфологической насыщенности и формальных характеристиках неличных форм глагола — особенно более развитую и разнообразную систему в азербайджанском языке — синтаксические функции глагольных словосочетаний, выражающих направленность действия, в значительной степени совпадают в обоих языках. В то же время исследование демонстрирует, что деепричастные конструкции в азербайджанском языке обладают большей функциональной гибкостью благодаря своей богатой семантической и морфологической структуре.

Полученные результаты способствуют более глубокому пониманию взаимодействия формы и функции в неличных глагольных конструкциях, а также выявлению как типологических сходств, так и языково-специфических особенностей в выражении направленности действия.

Keywords: *verb phrase, direction of action, non-finite verb forms, infinitive, participle, converb, gerund, syntactic function, English, Azerbaijani*

Ключевые слова: *глагольное словосочетание, направление действия, неличные формы глагола, инфинитив, причастие, деепричастие, герундий, синтаксическая функция, английский язык, азербайджанский язык.*

Introduction

The study of non-finite verb forms and the constructions formed on their basis has long occupied an important place in linguistic research, particularly in the fields of syntax and functional grammar. Within this framework, verb phrases expressing the direction of an action represent a specific and relatively underexplored area, especially in cross-linguistic perspectives. These constructions are of particular interest due to their ability to combine verbal semantics with various syntactic roles, thereby reflecting the interaction between form and function in language.

In both English and Azerbaijani, verb phrases expressing the direction of an action are primarily formed on the basis of non-finite verb forms, including the infinitive, participle, gerund, and, in the case of Azerbaijani, the converb. These forms, while sharing certain universal grammatical properties, differ significantly in their morphological structure, functional range, and degree of productivity. Azerbaijani, as a Turkic language, possesses a more developed system of non-finite verb forms, which allows for a wider variety of syntactic constructions and greater functional flexibility. In contrast, English relies on a comparatively limited set of non-finite forms, which nevertheless demonstrate a high degree of syntactic versatility.

The relevance of the present study lies in the need to examine how verb phrases expressing directional meaning operate within these two typologically different languages and to identify both their shared features and language-specific characteristics. Although previous research has addressed non-finite verb forms in each language separately, comparative analyses focusing specifically on directional verb phrases remain limited.

The aim of this study is to investigate the syntactic functions of verb phrases expressing the direction of an action in English and Azerbaijani and to determine the extent to which these functions correspond across the two languages. The research focuses on constructions formed with infinitives, participles, converbs, and gerunds, analyzing their roles as subjects, objects, attributes, predicatives, and various types of adverbials.

The novelty of the research lies in its integrative approach, combining structural and functional analysis within a comparative framework. By examining these constructions in parallel, the study seeks to contribute to a deeper understanding of the typological relationships between English and Azerbaijani and to highlight the role of non-finite verb forms in shaping syntactic organization.

The structure of the article is organized according to the main types of non-finite verb forms that serve as the basis for verb phrases expressing directional meaning. Each section provides a detailed analysis of their syntactic functions, supported by examples from both languages.

Methodology

The present study is based on a comparative and descriptive methodological framework aimed at identifying and analyzing the syntactic functions of verb phrases expressing the direction of an action in English and Azerbaijani. The research adopts a qualitative approach, focusing on the structural and functional properties of constructions formed on the basis of non-finite verb forms.

The primary methods employed in the study include comparative analysis, structural-syntactic analysis, and contextual interpretation. The comparative method allows for the identification of similarities and differences between the two languages, while structural-syntactic analysis is used to determine the roles that these verb phrases perform within sentence structure. Contextual analysis is applied in order to interpret the functional behavior of these constructions within authentic linguistic contexts.

The empirical material of the study is drawn from both linguistic sources and literary texts. In particular, examples in English have been selected from the works of well-known authors such as Charles Dickens, Charlotte Brontë, John Galsworthy, W. Somerset Maugham, Oscar Wilde, and Ethel Voynich. These literary texts provide naturally occurring instances of non-finite verb constructions and ensure the authenticity of the analyzed material.

The Azerbaijani-language examples are taken from the works of prominent writers such as Ali Valiyev, Mir Jalal, Jafar Jabbarlı, Samad Vurgun, and Mehdi Huseyn. The inclusion of these authors allows the study to reflect the richness and stylistic diversity of Azerbaijani literary language, as well as the functional variability of non-finite verb constructions in real usage.

The selection of examples was carried out according to the principle of functional relevance; that is, only those constructions that clearly express the direction of an action and perform identifiable syntactic roles were included in the analysis. The examples were then classified based on the type of non-finite verb form (infinitive, participle, converb, gerund) and their corresponding syntactic functions (subject, object, attribute, predicative, and various types of adverbials).

Through this methodology, the study aims to provide a systematic and comprehensive analysis of verb phrases expressing directional meaning, highlighting both cross-linguistic correspondences and language-specific features.

Main text. As is well known, in both English and Azerbaijani, all verb phrases, including those expressing the direction of an action, are formed on the basis of non-finite verb forms and perform syntactic functions corresponding to the syntactic roles of these forms. In other words, whichever syntactic function non-finite verb forms fulfill in a sentence, verb phrases formed on the basis of these forms perform the same functions. In this respect, the leading role is naturally played by the verb form that constitutes the core of the phrase. Thus, in both English and Azerbaijani, non-finite verb forms, whether used independently or in combination with other words to form verb phrases, retain the same syntactic functions. There are certain differences between the verb forms that play a central role in the formation of verb phrases expressing the direction of an action in English and Azerbaijani. These differences are also reflected in the syntactic functions they perform. As is well known, non-finite verb forms in these languages differ in terms of their number, nature, and formal characteristics. These features are likewise manifested in their syntactic functions:

“If the finite form of the verb performs only one syntactic function as the simple predicate of the sentence, non-finite forms are capable of combining several syntactic positions” [Ivanova, 1981: 80].

Taking all these features into account, the syntactic functions of verb phrases expressing the direction of an action in English and Azerbaijani will be examined separately.

In Modern English, certain verb phrases function as the subject, occurring simultaneously with the action expressed by the predicate and typically preceding it. In this function, infinitive phrases are most commonly used. For example:

***To explain this** is not so easy*.

***To lift it easily** was very difficult*.

One of the characteristic features of English is that verb phrases can function as the subject in both active and passive forms. In such cases, these verb phrases are closely connected with the context and may sometimes be used in combination with the preposition *for*. For example:

***For time to swear** was such a rarity that David was not only shocked but thoughly started*.

It should be noted that verb phrases functioning as the subject also possess a number of specific features. These features are as follows:

If the verb is not connected with other words by means of a conjunction, it may be used with the particle *to* before each verb. For example:

*My intention was **to see her** as soon as possible, **to talk to her**, **to calm her**.*

If the verbs are connected by the conjunctions *and* or *or*, the particle *to* is used only before the first verb. For example:

*Your duty will be **to teach him*** French and ***play with him***.

In English, certain verb phrases can also function as predicative's in a sentence. In such cases, adverbs such as *how* and *when*, as well as pronouns functioning as conjunctions such as *what* and *whom*, are widely used. These features typically depend on the lexical meaning of the noun in the sentence. However, it should be particularly emphasized that they are not used in interrogative sentences.

As in English, verb phrases in Azerbaijani can perform various syntactic functions depending on their position in the sentence. Verb phrases expressing the direction of an action differ both semantically and structurally, and accordingly, the syntactic functions they perform also vary. For example, word combinations formed with the infinitive, the gerund, and the participle may function in different syntactic roles in accordance with the meanings of these verb forms. Taking all these aspects into account, the syntactic functions of verb phrases expressing the direction of an action in English and Azerbaijani will be examined separately according to the nature of their main component.

A. Verb phrases formed with the infinitive expressing the direction of an action

The infinitive, as one of the non-finite forms of the verb, can perform the following functions in a sentence:

– Subject function:

***To walk in the garden** was pleasant – **Bağda gəzmək** xoş idi.*

When the infinitive is used in the function of the subject, it may also appear after the predicate. In this case, the sentence begins with the formal subject *it*:

*It was pleasant **to walk in the garden** – **Bağda gəzmək** xoş idi.*

*It was difficult **to drive the car** – **Maşını sürmək** çətin idi.*

– Object function:

*She taught him **to ride a bicycle** easily – O, ona **velosiped sürməyi** asanlıqla öyrətdi.*

– Function as a component of a complex object:

*I want you **to come for a walk** with me // Mən sizin mənimlə **gəzməyə getməyinizi** istəyirəm* (E. Voynich).

– Attributive function:

*I am a man **to walk in the park** slowly // Mən **parkda** asta-asta gəzən adamam*.

The infinitive in the adverbial function is mainly used to express purpose and result:

*Lanny reached down **to run a mile longer** (Maugham).*

*He's not strong enough **to go back to** his own place (Maugham).*

In Azerbaijani, as in English, the simplest non-finite form of the verb in structural terms is the infinitive. This form is formed by means of the suffix *-maq²*. Like other non-finite verb forms, the infinitive possesses a dual nature, primarily embodying the nominalization of the action. This feature brings it closer to nouns. Therefore, word combinations formed on the basis of the infinitive and expressing the direction of an action perform the syntactic functions typically associated with nouns in a sentence. Such verb phrases most frequently function as the subject, object, and certain types of adverbials, as well as components of second- and third-type attributive word combinations. From this perspective, verb phrases formed with the infinitive and expressing the direction of an action function in the following syntactic roles:

– Subject function:

*Ancaq onu bilirəm ki, **yarı yoldan qayıtmaq** Şeydaya da, sənə də yaraşmaz/ I only know that **turning back halfway** would not suit either Sheyda or you* (H. Mehdi).

– Object function:

*Əgər Xəlilov **avadanlıq göndərməyə** mane olubsa, qazmanı nə üçün dayandırmayıblar?/ If Khalilov has prevented the **delivery of equipment**, why did they not stop the drilling? (H.Mehdi).*

***Qonaqları hörmətlə yola salmaqda** Dilmanı həmişə nümunə göstərirdilər // Dilman was always held up as an example for **seeing off guests with respect** (H. Mehdi).*

*Özün bilirsən ki, **uzaq yol getməklə** mənim aram yoxdur // You yourself know that I have no desire **to travel long distances** (A.Valiyev).*

– Adverbial function:

*Evə **yorğun halda daxil olmamaq üçün** həyətdə xeyli dincəlirdi // In order not **to enter the house in a tired state**, he would rest in the yard for a while (A. Valiyev).*

***Şəhərə getmək üçün** min bəhanə tapırdı // He would find a thousand excuses **to go to the city** (A. Valiyev).*

– As a component of second- and third-type attributive word combinations:

***Ərinin qazanc gətirməyi** Mələknisənin dilindən düşməzdi //Malak-nisa would constantly speak about her **husband's earning a livelihood** (Mir Jalal).*

*Anacan, yoxsa **mənim evə gəlməməyimdən** nigaransan?//Mother, are you worried that **I am not coming home**? (A.Valiyev).*

As can be seen from the examples, constructions formed with the infinitive and expressing the direction of an action can perform various syntactic functions. Most of these syntactic functions of the infinitive coincide in English and Azerbaijani. This, of course, is related to the nature of the infinitive as a grammatical category.

B. Verb phrases formed with participles expressing the direction of an action.

In Modern English, both types of participles can function in various syntactic roles:

– Attributive function:

Hallward glanced round him, with a retreated step (O. Wilde).

A lowering flag made some of the windows dark (O. Wilde).

In Modern English, participles can also be used with conjunctions such as *while, when, unless, as, as if, though,* and *as though,* functioning as different types of adverbials in a sentence. For example:

– Adverbial modifier of time:

***While travelling in the city**, I saw many interesting places (J. Galsworthy).*

*He bowed low **when presented** to Dinny (J. Galsworthy).*

– Adverbial modifier of comparison:

*She stood still **as though checked in her advance** by the enemy.*

– Adverbial modifier of concession:

*The man left the room calmly, **though slightly shaken.***

– Adverbial modifier of condition**:**

*I would go to the party **if I could fight my way** forward.*

The present participle can also function without conjunctions as adverbials of time, cause, and manner. For example:

***Entering the room**, he greeted the guests heartily.*

***Knowing English well**, he could translate the article without a dictionary (J. Galsworthy).*

***Turning the handle courteously,** he looked out (J. Galsworthy).*

It is well known that participles constitute a special group of words that develop from verbs toward adjectives, combining features of both. In a sentence, they are associated with a noun and express its characteristic through an action. Due to these features, non-finite verb forms are sometimes rightly considered as intermediate units of the language system. In other words, words belonging to this group reflect both verbal and adjectival properties.

The role of participles, including verb phrases formed with this verb form and expressing the direction of an action, corresponds to that of adjectives in a sentence. They most commonly perform an attributive function, serving as modifiers. In addition, participles, like adjectives, can undergo substantivization and acquire a nominative character, thereby functioning as other parts of the sentence. For this reason, participial constructions expressing the direction of an action can also become substantivized and perform the functions of most sentence elements.

– Attributive function:

Verb phrases formed on the basis of participles and expressing the direction of an action most frequently function as attributes in a sentence. Just as all types of participles can perform this function, verb phrases formed with participles, in all their varieties, are also capable of fulfilling this role. By the types of participles, we mean forms derived through different participial suffixes.

Unlike English, in Azerbaijani all participial forms, regardless of their morphological formation, inherently possess the semantic potential to qualify a noun. This semantic feature is preserved in their syntactic function as well. In English, however, as is well known, participles denote qualities related either to an object or to an action and occur in two forms.

In Azerbaijani, verb phrases formed with participles expressing the direction of an action most often function as attributes and typically precede the nouns they modify. For example:

*Onlar arxın kənarında qazılmış, **içi mədən kübrəsi və peyinlə doldurulmuş** quyuya su buraxıb, sonra zəif kolların dibinə apardılar // They released water into a pit dug along the side of the ditch and **filled with mineral fertilizer and manure,** and then directed it to the roots of the weak bushes (A.Valiyev).*

*Ayna qabağından çəkilib yerinə gəldi və **əyalətlərə göndərdəcək** adamların siyahısını qabağına qoydu // She stepped away from the mirror, returned to her place, and placed in front of her the list of people **to be sent to the provinces** (M. Ibrahimov).*

*Bu gün bir dəstə kolxozçu təzə **kanal çəkiləcək** yeri nişanlayırdı // Today, a group of collective farmers was marking the place where a new **canal would be constructed** (A.Valiyev).*

In these sentences, the constructions *mədən kübrəsi və peyinlə doldurulmuş (filled with mineral fertilizer and manure)*, *əyalətlərə göndəriləcək (to be sent to the provinces)* and *kanal çəkiləcək (canal would be constructed)* express both the direction in which the action is carried out and, through this action, the characteristic of a particular object. The constructions themselves function as attributes within the sentence.

– Subject function:

Verb phrases formed on the basis of participles and expressing the direction of an action can also function as the subject in a sentence. In such cases, both the participles and the verb phrases formed with their participation undergo substantivization. However, such verb phrases occur relatively rarely in the subject function. For example:

***Torpaq daşıyanlar** gəlib oturdular //**Those carrying soil** came and sat down (A. Valiyev).*

***Sərhəngin axtardığı** da elə budur // What **Sarhang is looking for** is exactly this (M. Ibrahimov).*

– Predicative function:

Verb phrases formed on the basis of participles and expressing the direction of an action can also function as the predicate in a sentence. In this case, the participial construction undergoes substantivization and takes predicate markers. For example:

*Dediyim adamlar **irəlidə gedənlərdir** // The people I mentioned are **those going ahead**.*

*Bu adamlar **müharibədən qayıdanlardır**//These people are **those returning from the war.***

– Object function:

Verb phrases formed on the basis of participles and expressing the direction of an action can also function as objects through substantivization. However, as noted above, such verb phrases are used relatively rarely in this syntactic function, since their primary role is attributive, and they are therefore more frequently employed as modifiers. For example:

*Otaqdakı uşaqlar Həbibə çox munis görünürdü və o, **nəyə gəldiyini** belə unudurdu//The children in the room seemed very endearing to Habib, and she even forgot **why she had come** (A.Valiyev).*

*O, qocanın **kim olduğunu** və **necə qaçdığını** bilmək istəyirdi //He wanted to know **who the old man was** and **how he had escaped** (M. Ibrahimov).*

As can be seen from the examples provided, like participles themselves, participial constructions formed with them most frequently function as attributes in a sentence, while in some cases they may also perform the functions of other sentence elements.

C. Verb phrases formed with converbs expressing the direction of an action.

Among the non-finite verb forms in Azerbaijani, converbs are distinguished by their specific features, rich semantic and morphological characteristics, and their syntactic position. This verb form is particularly noteworthy in that, unlike Azerbaijani, the English language does not possess an equivalent non-finite verb form; its functions are partly fulfilled by certain participial constructions.

Converbs, in addition to Azerbaijani, also display distinctive features in other Turkic languages. This has not escaped the attention of researchers:

In Turkic languages, the category of the converb is so complex and rich in terms of its semantic-morphological features and functional load that it is difficult to provide a unified, generalized definition or to designate it with a single term. [Aliyev, 1989: 4].

In Azerbaijani, these properties of converbs are also reflected in the verb phrases formed directly with their participation, enabling such constructions to perform a variety of syntactic functions.

In Azerbaijani language:

"the converb is a word form that primarily possesses verbal and, to some extent, adverbial features. … Unlike finite verb forms, the converb is semantically linked to another verb and explains it from various perspectives" [Huseynzade, 1983: 217–218].

However, although converbs, like other non-finite verb forms, can express different meanings, they do not completely lose their verbal nature; that is, they retain the potential to express the meaning of action. At the same time, by being associated with a particular action within the structure of a sentence and by modifying it from different aspects, converbs acquire features similar to those of adverbs.

As noted, converbs, which attract attention due to their diverse morphological structure, clarify the main verb from various perspectives. This feature of the converb is determined by the suffixes involved in its formation and conditions the syntactic functions performed by the word combinations formed with converbs.

The meanings expressed by verb phrases formed on the basis of verbs denoting the performance of an action in a particular direction correspond to the meanings conveyed by converbs. Likewise, the types of converbial constructions correspond to the types of converbs. However, unlike converbs used independently, the meanings of word combinations formed on the basis of converbs become more specific, since the meaning expressed in the construction is clarified with the help of the accompanying words.

In this respect, since converbs in Azerbaijani primarily modify the main verb in terms of manner and time, converbial constructions mainly function as adverbials of time and manner. Converbs that explain the main action in terms of time are formed with suffixes such as *-anda²*, *-dıqda⁴*, and *-kən*, while those expressing manner are formed with suffixes such as *-araq²*, *-ıb⁴*, etc. Such converbs, when combined with other words, form verb phrases that perform various types of adverbial functions in a sentence.

Taking all these aspects into account, it can be stated that verb phrases formed with converbs expressing the direction of an action are used in the following syntactic functions:

– Adverbial modifier of time:

Since verb phrases formed with converbs expressing the direction of an action predominantly convey a notion of relative time, a considerable number of them function as adverbials of time in a sentence. However, in such cases, they express not definite but indefinite temporal reference. Converbs used in this function may possess various morphological features. For example:

*Onlar **otaqdan çıxmamış** otağa səs-küylə bir qadın girdi //**Before they had left the room**, a woman entered noisily (J. Jabbarli).*

***Evə çatmamış** "nə var, nə yoxu" bilmərəm // **Before reaching home,** I would not know what had happened (Mir Jalal).*

*Kəndin kənarına **yaxınlaşanda** arxasına baxdı // As he **approached the edge of the village**, he looked back (Mir Jalal).*

***Düşüb-düşməyəli bu saraylara**, hələ rast gəlmədim vəfalı yara // **Since I came to these palaces**, I have not yet encountered a faithful beloved (S. Vurgun).*

As can be seen from the examples, converbial constructions function as adverbials of time by expressing the temporal framework of the main action in the sentence.

– Adverbial modifier of manner:

A number of word combinations formed with converbs, which also express the direction of an action, function as adverbials of manner in a sentence. Converbs used in this function are formed by means of suffixes such as *-ıb⁴*, *-araq²*, and *-madan²*. For example:

Onlar ***küçənin tinindən keçərək*** *üzü yuxarı getdilər//****They passed the corner of the street*** *and proceeded upward (Mir Jalal).*

O, ***şəhər yolundan dönüb*** *kərpic zavoduna yol aldı // He* ***turned off the road to the city*** *and headed toward the brick factory (Mir Jalal).*

Yasovul irəli ***hərəkət etmədən*** *işin mahiyyətini öyrənməyə çalışırdı //The guard tried to understand the essence of the matter* ***without moving forward*** *(A. Valiyev).*

Sometimes, verbs expressing the direction of an action undergo figurative extension, take converbial suffixes, and, in combination with other words, form constructions functioning as adverbials of manner in a sentence. For example:

O, ***gücü gəldikcə*** *barmağını düyməyə basmışdı // He pressed the button with his finger* ***as much as his strength allowed*** *(A. Valiyev).*

Verb phrases formed with converbs and expressing the direction of an action primarily perform the syntactic functions of adverbials of time and manner. However, in some cases, converbial constructions expressing the direction of an action may also function as adverbials of concession in a sentence. For example:

Əlindən hər şey gələ-gələ, özünü dilə-dişə salırsan // **Although you are capable of doing everything,** *you still put yourself in a difficult position (A. Valiyev).*

Gəzməyə gedincə *evdə oturub dərslərini hazırlasan yaxşıdır //* ***Instead of going out for a walk,*** *it would be better if you stayed at home and prepared your lessons.*

Below, for comparison, several sentences from English are presented, translated into Azerbaijani using converbial constructions:

The boys stood on the bank throwing stones into the water // Oğlanlar daşları çaya ata-ata çayın sahilində dayanmışdılar.

Having thrown the ball into the water, the boy could not get it back // Oğlan topu suya tulladığından onu geri çıxara bilmirdi.

Throwing the disc a second time, he set a new record // Diski ikinci dəfə atdığından o, yeni rekord qazandı.

Having fulfilled his task, he returned home // Tapşırığı yerinə yetirdiyindən o, evə qayıtdı.

He left the room having thrown the letter into the fire // Məktubu ocağa atdığından o, otaqdan çıxdı.

D. Verb phrases formed with the gerund expressing the direction of an action

In Modern English, the gerund can perform the following syntactic functions in a sentence:

– Subject function. For example:

Restoring stolen property was his only dream (Ch. Dickens).

When functioning as the subject, the gerund is typically used in the pre-predicate position. However, in some cases, it may also appear in the post-predicate position. In such instances, the sentence is introduced by the formal subject *it*. Gerunds functioning as the subject are most frequently used after expressions such as *it is no use* and *it is worthwhile*. For example:

It is no use going there so early.

It is useless forcing his way through this street (Ch. Dickens).

– Predicative function. For example:

Our aim is building a new society.

– Object function. For example:

I remember ***descending the high hill at twilight*** (Ch. Bronte).

– Attributive function. For example:

There was an old door on which the boys had a habit of carving their names (Ch. Dickens).

In this function, the gerund is used with a preposition. For example:

The rain poured down without ceasing (Maugham).

I paused outside the parlour door on coming after my boss (Ch. Dickens).

Summarizing the above, it can be stated that in both English and Azerbaijani, verb phrases expressing the direction of an action are formed through the combination of non-finite verb forms with various lexical elements. However, since non-finite verb forms in Azerbaijani are richer and more diverse than those in English, their potential for forming verb phrases is correspondingly broader.

From the perspective of the syntactic functions performed by verb phrases expressing the direction of an action, there are no significant differences between English and Azerbaijani.

Conclusion

The present study has demonstrated that verb phrases expressing the direction of an action in both English and Azerbaijani are primarily formed on the basis of non-finite verb forms and perform a wide range of syntactic functions, including subject, object, attribute, predicative, and various types of adverbials. Despite structural and morphological differences between the two languages, particularly the richer system of non-finite forms in Azerbaijani, their functional behavior shows a high degree of correspondence.

At the same time, the analysis has revealed that Azerbaijani converbial constructions exhibit greater flexibility and functional diversity, especially in expressing temporal and manner-related meanings. This highlights the typological specificity of Azerbaijani in comparison with English.

Overall, the findings confirm that the interaction between grammatical form and syntactic function plays a key role in the organization of verb phrases in both languages, while also reflecting language-specific features shaped by their morphological systems.

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MOTİFS OF MADNESS AND THE TRİCKSTER ARCHETYPE İN EPİC NARRATİVES

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МОТИВЫ БЕЗУМИЯ И АРХЕТИП ТРИКСТЕРА В ЭПИЧЕСКОМ ПОВЕСТВОВАНИИ

Abstract.
This article analyzes the concept of madness through the prism of the trickster archetype. From the perspectives of anthropology, psychoanalysis, mythology, semiotics, and cultural theories, madness is examined not merely as an illness but as an entity that exposes social norms. The article provides a separate analysis of the features of the "madman" figure in Azerbaijani national folklore that intersect with trickster characteristics. The phenomenon of madness is associated with the trickster archetype within the collective imagination and cultural structures. Based on psychoanalytic, anthropological, and mythological approaches, it is demonstrated that "madness" carries a transformative power that disrupts the boundaries of social order while simultaneously contributing to its reconstruction. The aim of this article is to analyze madness as a trickster complex and to examine its archetypal, structural, and social functions from a broader perspective. Madness represents a form of self-critique within the semiotic system. The trickster transcends physical and moral boundaries. Similarly, madness functions as a condition that moves between dualities such as consciousness and the unconscious, life and death, human and animal, sacred and profane, rationality and irrationality, as well as the cultural and the natural.

Аннотация.
В данной статье понятие безумия анализируется через призму архетипа трикстера. С точки зрения антропологии, психоанализа, мифологии, семиотики и теории культуры безумие рассматривается не только как болезнь, но и как феномен, обнажающий социальные нормы. Особое внимание уделяется анализу образа «безумца» в азербайджанском национальном фольклоре и его пересечений с чертами трикстера. Феномен безумия соотносится с архетипом трикстера в коллективном воображении и культурных структурах. На основе психоаналитических, антропологических и мифологических подходов показано, что «безумие» обладает трансформативной силой, которая нарушает границы социального порядка и одновременно способствует его пересозданию. Целью данной статьи является рассмотрение безумия как трикстерского комплекса и анализ его архетипических, структурных и социальных функций в более широкой перспективе. Безумие представляет собой форму самокритики семиотической системы. Трикстер преодолевает физические и моральные границы. Аналогичным образом безумие функционирует как состояние, находящееся между такими дуальностями, как сознательное и бессознательное, жизнь и смерть, человек и животное, сакральное и профанное, рациональное и иррациональное, культурное и природное.

Keywords: *madness, trickster, archetype, complex, rationality, deception.*
Ключевые слова: *безумие, трикстер, архетип, комплекс, рациональность, обман.*

Introduction. The trickster archetype characterized by deception, agility, transgression, and boundary-crossing parallels many mythological and social representations of madness. This similarity provides a theoretical foundation for conceptualizing madness as a trickster complex. The trickster is simultaneously creative and destructive; foolish and wise; mad and rational; obedient to sacred laws and yet capable of violating them.

According to H. Guliyev, figures labeled as "mad" in folklore, classical literature, and culture in general are, in fact, figures who oppose norms. In folklore, the semanteme of madness encompasses meanings such as bravery and heroism. At the same time, it conveys the idea of resistance to rules, as seen in figures like Deli Domrul, Deli Qarcar, and the mad minstrel (as Beyrek's temporary ritual status). The episode involving Deli Domrul and Azrael naturally appears abnormal. Similarly, the behavior and demands of Deli Qarcar, as well as Beyrek's actions in the guise of a mad minstrel, express chaos that is, trickster behavior. In this sense, madness is attributed to figures capable of oscillating between chaos and cosmos, just as the trickster moves between the subconscious and consciousness, chaos and order, norm and anti-norm. The ritual qualities and mediatory character of the mad figure can be explained by the trickster's ability to traverse dual dimensions physical and spiritual, rational and irrational [7, p. 135].

It should be noted that S. Rzasoy, who studied the semantics of mad figures in the Oghuz epic *The Book of Dede Korkut*, was the first in world Turkology to demonstrate that "madness" represents the liminal status of an individual undergoing an initiation ritual. In this transitional phase, Oghuz heroes are referred to as mad. As the author explains, among the Oghuz, a neophyte undergoing initiation was called mad:

a) The "mad" heroes in the epic occupy a transitional status, positioned at the junction of cosmos and chaos;

b) Because they bear a transitional status, they exhibit dual behavioral patterns, existing both within cosmos (the Oghuz world) and chaos (the false world);

c) This dual status enables mediation between worlds, granting "mad" heroes a mediatory function;

d) Dual behavioral status is possible only within ritual space-time, making "mad" heroes subjects of ritual regimes.

Thus, the "mad" figures in *The Book of Dede Korkut* are initiation subjects passing from one status to another participants in death and rebirth rituals. Transition from one status to another is impossible without symbolic death and rebirth. A hero dies in one status and is reborn in another, a process realized exclusively through initiation rituals. These rituals constitute a space-time regime where cosmos and chaos intersect. Within this regime, ritual subjects demonstrate both normative (cosmic) and anomalous (chaotic) behaviors. As seen in the epic, this dual behavioral status is termed madness, and heroes possessing it are marked with the epithet "mad," granting their anomalous actions a legitimized, normalized status within the Oghuz ethno-cosmic structure [8, p. 374; 9, pp. 169–180].

Madness is one of the most volatile and repeatedly resemanticized concepts in human history. Across cultures, madness has been interpreted as divine power, moral deviation, social danger, or wisdom. The trickster, meanwhile, is a paradoxical figure present in many mythological systems. He both violates rules and reveals their essence, posing a threat to social order while also enabling its renewal.

From existing interpretations, it becomes clear that madness an attribute inspired by chaos functions as a form of self-critique within cosmos. Like the trickster, the mad figure transgresses boundaries. Madness operates as a condition that moves between dualities: consciousness and unconsciousness, life and death, human and animal, sacred and profane, rationality and irrationality, culture and nature.

In *Madness and Civilization*, Michel Foucault traces the history of the concept of madness in Western society, demonstrating that madness is not merely a medical condition but a social and cultural construct. As notions of "normality" shift, so too does the understanding of madness. Foucault outlines that:

- In the Middle Ages, mad individuals were often regarded as mystically or cosmically enlightened;
- During the Renaissance, madness came to embody wisdom and depth;
- In the Classical period (17th–18th centuries), madness was perceived as a threat to social order;
- In the modern era, madness was medicalized as a condition requiring diagnosis and treatment;
- These transformations are not reflections of absolute truth but outcomes of power relations [11, p. 117].

According to Foucault, madness represents "otherness." Societies define their boundaries by identifying what deviates from them. Thus, conceptions of madness are constructed to determine who is considered normal.

Consequently, in many cultures, mad figures function as safe channels of social critique, divine mediators, bearers of revelation, or executors of ritual transitions. Madness manifests as a disruption of language and symbolic systems, collapsing the boundaries of meaning production one of the core components of trickster activity.

There are evident parallels between madness and the trickster figure. The mad character is free to articulate ideas that society avoids or suppresses. In folklore, this is expressed through the belief that "truth comes from the mad." Madness thus represents a distinct manifestation of the trickster archetype. From this perspective, the madness trickster complex can be explained through processes of consciousness transformation and societal renewal.

Mad Trickster Figures in Azerbaijani Folklore

1. Molla Nasreddin

Molla Nasreddin is a quintessential trickster figure who unmasks social pretenses, disrupts intellectual boundaries through paradox, and plays ironically with reason. Although not explicitly labeled mad, his behavior defies normative rationality, placing him at the intersection of madness and tricksterism.

In one anecdote, Molla pretends to be mad to teach a lesson to his wealthy, boastful neighbor. When the neighbor knocks on his door, Molla replies from inside, "I'm not home," explaining that since the neighbor once trained his servant to lie in the same way, Molla lacking a servanth ad to declare his absence himself. He humorously concludes that he serves as both master and servant [2, p. 191].

In another tale, Molla responds to the foolishness of two villagers by acting mad himself. One prays for a thousand sheep, while the other prays for a thousand wolves to eat them, leading to mutual destruction. Molla slashes a molasses sack and declares that if they possess any sense, his stomach should burst like the sack [2, p. 142]. By feigning madness, he exposes their folly through irony and ridicule.

2. Bahlul Danende

Bahlul Danende similarly embodies the trickster archetype. To expose ignorance and societal flaws, he adapts to the environment of the foolish, behaving absurdly at times and offering wisdom at others. In one anecdote, he advises a man respectfully addressing him as "Danende" to invest in iron and coal, resulting in prosperity. When the same man later arrogantly addresses him as "Divane" (madman), Bahlul offers deceptive advice, leading to loss [2, p. 24]. Through this contrast, Bahlul reveals who the true madman is.

3. Qaraja Shepherd

In *The Book of Dede Korkut*, Qaraja Shepherd is remembered as a fearless boundary-breaker who confronts enemies unarmed, trusting only his sling. Living by the principle "I am mad, therefore I am strong," he challenges overwhelming forces, embodying both madness and cunning. His poetic defiance of the enemy demonstrates the superiority of his "mad" tools over conventional weapons [4, p. 47].

At times, Qaraja Shepherd also exhibits extraordinary prudence, using intellect to escape peril. When restrained by order of Kazan Khan, he uproots a massive tree, later convincing Kazan of its utility, thus earning praise and release [4, p. 49]. He is therefore a trickster who carries both wisdom and madness.

As M. Kazimoglu notes, not all heroes in the epic are labeled mad; the epithet serves to distinguish particular figures who occupy a unique symbolic and ritual status [3, p. 170].

4. Deli Qarcar

Deli Qarcar's rejection of long-established customs, including marriage traditions and reverence for Dede Korkut, marks him as a bearer of trickster madness. He kills suitors for his sister Banuchichek without regard for status, disrupting social order. Even Dede Korkut's sanctity fails to restrain him, as he insults and pursues him [3, p. 172].

5. Salur Kazan

Salur Kazan, a central figure in *The Book of Dede Korkut*, embodies both heroic virtue and contradiction. Though he praises himself in battle a typical epic trait he condemns others for self-praise. This paradox reveals a duality within the heroic code itself [5, p. 117].

As S. Rzasoy explains, Kazan simultaneously affirms and negates Turkic heroic typology, reflecting deeper tensions between the epic's surface and underlying structures [10, pp. 75–76].

6. "Mad" Motifs in Fairy Tales

In Azerbaijani fairy tales, mad protagonists exhibit fearlessness, disregard for social norms, and boundless self-sacrifice traits aligning them with the trickster archetype. Often, heroes feign stupidity to overcome hostile forces, revealing that their apparent madness is strategic intelligence. Examples include tales such as *Wisdom and Fortune*, *Hillimnan Gullum*, and *The Foolish Man* [1, pp. 174–180]. Through humor, these narratives educate audiences about true and false wisdom.

7. Madness in the Epic of Koroglu

Among Turkic heroic epics, *Koroglu* occupies a special place in both content and character system. Koroglu is not only a rebel hero but also a bearer of the madness trickster archetype. His unconventional behavior, ironic speech, and strategic disguise distinguish him from classical epic heroes.

Koroglu's madness is intentional rather than foolish. By mocking tyrannical rulers, disguising himself as a minstrel or servant, and behaving unpredictably, he confounds his enemies. His madness becomes a tactical advantage, rendering oppressive authorities powerless and ridiculous [6, p. 180].

Koroglu's madness conceals a core of social rebellion. Speaking on behalf of the powerless, he employs trickster strategies to articulate forbidden truths, ridicule authority, and dismantle fear through humor and irony. Thus, madness and tricksterism function as complementary semantic layers within his character.

Conclusion. There exists a profound connection between madness and tricksterism, manifested through metaphorical, structural, and psychological parallels. The trickster complex allows madness to be understood not solely as pathology but as a culturally meaningful, norm-disruptive, and dynamic phenomenon. This approach broadens the socio-cultural interpretation of madness and situates it within anthropological and mythological frameworks, providing fertile ground for interdisciplinary analysis.

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KHALIDE EDIB ADIVAR AND "THE ORDEAL"

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ХАЛИДЕ ЭДИБ АДЫВАР И «ИСПЫТАНИЕ»

Abstract.
One of the immortal works by Khalide Edib Adivar "The ordeal" (1922), written during the National Literature period, reflects with deep sensitivity the important role played in the lives of various people in society during the War of Independence and the National Struggle period (1918-1922), in which she also participated. In this article it is said about the theme of the literary example, the characters and the idea that wanted to transmit to society. One can call this work not just a war, but also a psychological novel, in which love for the native land, a story of self-sacrifice and resistance, pure feelings of love are reflected.

Аннотация.
Одно из бессмертных произведений Халиде Эдиб Адывар — роман «Испытание» (1922), написанный в период Национальной Литературы, с глубокой чувствительностью отражает важную роль, которую сыграла в жизни различных слоёв общества. война за независимость и период национально-освободительной борьбы (1918–1922), в которой она сама принимала участие. В статье рассматриваются тема данного литературного произведения, его персонажи и идея, которую автор стремилась донести до общества. Это произведение можно назвать не только военным, но и психологическим романом, в котором отражены любовь к родной земле, история самопожертвования и сопротивления, а также чистые чувства любви.

Keywords: *War of Independence, Izmir, Greek, occupation, native land, fire*
Ключевые слова: *Война за независимость, Измир, греки, оккупация, родная земля, огонь.*

Introduction

One of the powerful figures who brought a new breath to the Turkish literature and prose of the 20th century with her rich and multifaceted creativity, at the same time played an important role in the formation of the literary taste of this period and gave a strong impetus to the generation that came after her is Khalide Edib Adivar. The period when she began her career coincided with the fateful, significant historical changes in society in Turkey. The early period of the master's creativity falls on the period of "Wealth of knowledge", the middle period falls on the period of National Literature and later on the period of the Republic. The master wrote novels, stories, plays and memoirs, all of which are valuable and reflect the problems of her time.

Khalide khanim has a significant place and position in 20th century Turkish literature and has gained more fame in the literary space with her prose examples such as "Grocery store with flies", "The ordeal", "New Turan", "Handan", "Zeyno's son", "Tatar", etc., and has gained deep love and sympathy from a wide audience.

Investigation

The themes addressed in the works of this powerful master, who began her creative career during the proclamation of the Second Constitutional Monarchy (1908), were mainly the involvement of women in science and education in the early years and the protection of their rights, later, during the years of the War of Independence, she wrote novels that appealed to the heroic Turkish people to unite against the enemy, to be together and to further increase their feelings of patriotism.

In general, Khalide Edip Adivar's activity is multifaceted and the main themes of her works are mainly her turbulent life, period and historical moments. Looking through her biography, one can see that the reason she addresses political issues more often stems from her personal life. Her father, Mehmed Edib Bey, was an oppositional-minded bureaucrat who handled financial affairs in the sultan's treasury at the palace of Abdulhamid II. Khalide Edib was born in Beshiiktash and completed her education at the Uskudar American College for Girls, becoming one of the first Muslim women to graduate from that institution. Her politically developing ideas were largely formed during her years at this college and her studies with feminist teachers also had a significant impact on shaping her worldview.

In the early years of her activity she was threatened at some points because her literary examples promoted ideas such as women's rights, their role in society and their involvement in education, in general, Khalide Edib's life has been so tumultuous that it even overshadows her novels. Her first husband, Salih Zeki, was an intellectual, a prominent mathematician and philosopher of his time and had been Khalide khani's teacher and of course, he was older than her. This marriage covers an important period of her life and according to the researchers' thoughts, it is known that her novel "Handan" also includes some moments from her own life. Khalide khanim began her creative work mainly after the proclamation of the Second Constitutional Monarchy, i.e., in 1908. Despite her young age, she had already developed a very strong character (perhaps the many events in her personal life laid the foundation for it). The moral and psychological trauma she experienced during her first marriage (1901-1911) affected her works, especially the work "Handan". If Khalide khanim glorified female freedom, tender feelings of love and secret feelings of affection in this work, the novel "The ordeal" (1922), which will be discussed below, glorifies the heroism of Turkish woman.

With this novel, which tells the story of the national struggle and the Turkish War of Independence in Turkey, the powerful master Khalide Edib Adivar created a unique example of the National Literature Era. This work is considered the first prose work written in Turkey on the subject of the War of Independence and is still considered one of the best novels ever written. The prose sample reflects both Khalide khanim's love for Anatolia and at the same time the manifestation of her nationalist ideology ignited by the War of Independence. This novel was written at the time when significant events occurred in Turkish society after World War I, the successive occupations of Istanbul and Izmir, and as a result, the feeling of protecting the native land was ignited in every citizen and the war continued. Since June 1922, that work had been published in parts in the newspaper "Ikdam" and presented to the public. The work consists of the fragile memories of Peyami, a foreign affairs officer, written in his own words while waiting for the day of his surgery in the hospital.

At the beginning of the novel Peyami is described in detail as a Westernized, European-style person, his "A la franga" lifestyle, their house in the district Shishli, where he lives luxuriously with his mother, the daughter of a wealthy family from Izmir who grew up in Istanbul, and the parties held in that house. Peyami refuses to marry his close relative, Aishe, as his mother advised, because he does not consider his "provincial" relatives to be suitable for the society he belongs to. In general, at the beginning of the novel, Peyami, talking about his life, notes that it was lifeless and oppressive, and after meeting the heroes of this story, it seemed that his own life was gaining value. As he noted, this story is more about their life (Aishe and Ehsan) than about his own. The change in his way of looking at life begins after meeting his mother's cousin, officer Jamal, who was wounded several times in the military, his friend Ehsan and other comrades. On the eve, when the British opened fire on Istanbul, they saw the wounded residents of the city, all three young people were tormented and helpless against the oppression of the enemy. With the occupation of Izmir, which is important in the work, the events are directed to a completely different course. Jamal's sister Aishe, her husband Mukbil Bey and their young son are murdered brutally by the Greeks. Aishe herself survived, having been wounded in the arm. After the occupation of Izmir by the Greeks, as reflected in the work, it is as if an awakening, a panic arises in Istanbul, the Sultanahmet rally, at which Khalide khanim herself participated and which is remembered for her historic speech reflecting the determination, pride and resolve of the Turkish nation, delivered to thousands of her compatriots, has also been described vividly and emotionally. Peyami, Jamal, Ehsan, who were deeply moved by this crowd and felt an awakening within them, and Aishe from Izmir, dressed in black and standing with determination and pride despite all the hardships she faced, are also among this crowd. It was precisely with this proud stance that Aishe, unable to hold back her tears, had already made Peyami fall in love with her.

Jamal, Ehsan and Aishe form the basis of Peyami's penned memories, sincerely admitting that after meeting these heroes, his life acquired a value. This acquaintance causes his patriotic feelings to flare up even more: "Peyami has less life-folk experience than the writer. The people and nature he sees on the road, especially during the National Struggle, deeply affect him. The new world he encounters increasingly distances him from the old Peyami. He describes these impressions, which change him as they come into contact with him, with the excitement of the first, perhaps even the last, encounter" (1, 18). The attack of the Bulgarians on Izmir, the attack of the British on Istanbul, the events taking place in the city were described with great excitement from the hero's language. The controversy of British reporter Mr. Kuk with Aishe at Peyami's house in Shishli again brings to the fore what a patriotic person this brave woman is. The anger and hateful response of Aishe to Mr. Kuk for his offensive remarks about the Turkish nation, the tribulations of the British against this militant people, the disasters that occurred in Izmir are recalled, through the tragic fate of the native land, we relive Aishe's suffering once again, the brutal murder of her husband and child seems to unfold vividly before our eyes.

Later, Aishe, who joined Anatolia as a nurse, is now surrounded by Peyami and Ehsan, both of whom are people from other worlds, and both are in love with Aishe. As Peyami gets to know Aishe, he is amazed at her endurance and steadfastness, but as time goes on, he finds that Ehsan is also deeply in love with Aishe, but keeps his feelings a secret, not letting them down.

In the work, it is symbolic that a number of soldiers, who went to Izmir, on their way kissed Aishe's injured left hand – the daughter of Izmir, as if symbolizing the liberation military. The image of Aishe is a character representing an Anatolian person, a generalized image of thousands of women who have lost their husband, father, brother and children.

In the work the cruel torture of the British in Istanbul is described in Aishe's letters to Peyami, where at the same time we hear the Turkish heart beating violently for his native land, the patriotic woman expresses her feelings in expressions full of sadness.

The headquarters belonging to Ehsan in the war area is in the village of Sarilar. The writer introduces us to other characters from the Anatolian people here, the girl from this village, Kezban, is in love with the hero Ehsan, she loves him sincerely. In the example of a pure girl, we see brave, courageous and devoted Anatolian girls. Another character in the work, Sergeant Mammad, is in love with Kezban and hates this brave regiment commander because of his unrequited love and Kezban's love for Ehsan. While Ehsan was in an area with several soldiers, Sergeant Mammad surrounded them with his band of bandits. As Peyami was with them, he witnessed all the events, but the army that Kezban informed about arrived in time to save Ehsan and Sergeant Mammad was killed.

After a while, though Peyami parted ways with Ehsan, but he met him again in Sakarya, where he was sent as a translator and photographer. Here, the two friends have their first sincere conversation and Ehsan shares his feelings for Aisha with him, confessing his love, when he was wounded in one of the battles and thought everything was over, Aishe put cold cloths on his forehead and wet his lips, expressing the feelings he felt as he regained consciousness: "I swear, for a moment I see myself surrounded by the sweetest and most eternal white ether and I imagine myself as a man who has died and entered paradise. Yes, I had become a martyr. Martyrdom had taken me to paradise, all the way to Aisha's eyes. Looking into her eyes, I was once again overcome with ecstasy. What a blessed and absolute gratitude this was" (1, 164). In this part of the work Ehsan confesses his love to Aishe, though Aishe reciprocates this love, but as the most important issue at the moment is the liberation of the homeland from the invaders, she cannot respond to this love with the same feelings. Throughout the work, no one doubts that Aishe will die for her holy goal, for Izmir, as if she is preparing herself for it, she is always ready to become a martyr, telling every soldier who closed his eyes, "We send you to Allah, my friend, we'll meet on the road to Izmir" (1, 41). And so it happens, Ehsan and Aishe were heroically martyred in the Izmir war – on the way to Izmir, which is considered an integral part of the Anatolian geography.

In the section "Sakarya days" of Peyami's memoirs he regretfully notes that Aishe was unaware that he had lost his legs for his native land, because in one of the letters Aishe wrote to him that Peyami worked as an officer's lawyer and was far from the war zone, and asked how he could go to Izmir in that case. In this case, Peyami wished that Aishe would see him thrown into the deep part of the battle and lose his legs. One can understand here a point that it is as if Peyami joined the war zone in order to be close to Aishe: "This morning I recalled how my knees, now empty, ached when I received Aishe's last letter, how my heart and hands trembled with anxiety, as a memory etched in my body. There is a pain of a desperate desire within me. Aishe didn't know that I had lost my legs for Izmir. Even now, if a shell explodes on the front lines and my arms and head remain intact, she doesn't know that I'll crawl away" (1, 146).

Peyami conveys to the reader with enthusiastic feelings how the Turkish army soldiers bravely fought on the way to Izmir, their courage and bravery, each of them swore not to sheathe their swords until Izmir was liberated from the occupation (1, 151).

The work "The ordeal" demonstrates the patriotism, pride and determination of the Turkish people in the personality of Peyami, Aishe, Ehsan and others. At the same time, together with the heroes, we seem to travel inch by inch through Anatolian settlements and villages, get acquainted with the character of these people, admire their pure nature.

Professor Inji Engin mentions the following ideas as one of the main features of the novel "The ordeal": "Khalide Edib's personal contact with the Anatolian people during the years of the National Struggle, after she had become acquainted with them in Istanbul before moving to Anatolia, led her to develop a deep admiration for the Anatolian Turks. It was after this novel that Khalide Edib would go on to portray the Anatolian villager, who had not lost his national and noble qualities, in every one of her novels" (20, 219).

Throughout the work, we witness Peyami's spiritual exaltation, in his last memoir, written the day before the operation in Ankara Jabeji hospital, we are surprised in front of his love for Aishe: "My dear Aishe, look, my arms are still strong. I've sworn to fight for Izmir until my very last breath. Wipe the tears from your eyes. If you want, love Ihsan. That poor man loved you very much. For two years, he carried "the ordeal" on his back. Finally, he fell into your arms in Izmir. Isn't that enough happiness for just one person? This "ordeal" will never leave me, even after I die, I will carry it forever. But I love it, that fire, that agony, Aishe. Just give me a little space at your feet and I'll wait for you right there. I want to be worthy for you, Aishe, if you wish, I'll even lie at Ihsan's feet. Isn't he your owner? Aishe, there hasn't been such torment since the world began" (11, 209). Of course, Ehsan and Aishe are heroically martyred for their country. The work ends with a strange ending, Peyami dies during surgery. It is understood that all this is a fabrication created by the impact of the bullet in Peyami's brain: It turns out that there is neither a nurse named Aishe nor a regiment commander named Ehsan. On the other hand, how could the memories written by Peyami with heartache be considered fiction and dreams. At the beginning of the work, Peyami writes in his memory: "What did the doctor say? The bullet in my head is making a ghost in me", but on the other hand he continues so: "In Istanbul I have a mother who is dark-skinned, with a slender face, taut hair and who never seems to age. She also rejected me when I set out on this adventure. Did I say adventure? So, everything that happened to me is true. Maybe not all of it, but what's the harm?" The powerful master leaves it to the reader.

We would like to draw attention to one more issue. In this work Khalide khanim does not show Europe and Western culture as an example, unlike her earlier novels. On the contrary, she notes how the West pursues a colonial policy, openly declares its hatred, especially towards the British, and the Greeks.

When we look at the works she wrote before writing this novel, for example, in the work "Handan" the author mainly talks about the feelings and emotions of her youth, in the work "The promised judgment" she talks about the society in which the author was contemporary and in "The house with purple clusters" and

"The Trial of the Turk with fire" she talks about her own memories. It means the author turns from the chanting of personal feelings to the problems of society. In this work, the heroic daughter of the militant Turkish people in the image of Aishe is portrayed as a proud, brave person who is ready to give her life for her homeland at any time. However, in her earlier work "Handan" she hoped that it would be possible to express the emotions and feelings of women as an independent person.

Conclusion

The novel "The ordeal" is an example of the first prose account of the National War of Independence and Liberation (1919-1922), which was a key stage in Turkish history. As Mehmet Kaplan noted, this war introduced Anatolia, the Anatolian people, their suffering, spirit and character to Turkish writers (7, 158). The image of Aishe is a generalized image of thousands of women in Anatolia who have lost their husbands, fathers, partners and children.

The theme of love, divine love plays an important role in the work and from this point of view the title of the novel was chosen by the author skillfully, that is, here is the personal tragedy of all three heroes, as well as the place in their lives of the war that took place in the military history of the powerful Turkish people, it is at such a moment that they simply mobilize for the motherland, suppressing their love, individual feelings and emotions within themselves, they give up their love to defeat the enemy.

While Aishe and Ehsan are bound to each other by noble feelings, the liberation of their homeland is of greater importance and this noble feeling burns like a fiery shirt worn by the person. In other words, the main reason of the author in this novel is that if a homeland, a land is under the enemy occupation, if the honor and dignity of the people are in danger, the personal feelings, feelings of pure love are in second place.

The country literature, which is one of the important features of the National Literature period, which began to develop during this period, the sense of national certainty, the rediscovery of Anatolia, the whole character of this person, the love of the motherland, joy, sadness, love, excitement, moral and psychological shocks experienced in the turbulent livelihood of life are reflected in the work "The ordeal" by Khalide Edib Adivar.

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WORDS THAT CROSS BORDERS: A COMPARATIVE LINGUISTIC AND METAPHORICAL ANALYSIS OF THE CONCEPT OF REFUGEE

Abstract

The concept of "refugee" occupies a central position at the intersection of language, politics, and human experience. While forced displacement is a global phenomenon, its linguistic representation varies significantly across cultures and languages. This article examines how the concept of refugee is constructed, conceptualized, and metaphorically framed in different linguistic systems within the framework of comparative linguistics and cognitive metaphor theory. Drawing on cross-linguistic data from English, German, Russian, Azerbaijani, Turkish, Arabic, and French, the study explores both terminological variation and metaphorical structures that shape public perception.

The research is grounded in the theoretical framework proposed by Lakoff and Johnson (2003), who argue that human cognition is fundamentally metaphorical. In this context, refugee-related discourse is analyzed through dominant metaphorical models such as water ("flows," "waves"), burden ("load," "pressure"), and war ("invasion," "threat"). These metaphors are shown to play a crucial role in framing refugees either as vulnerable individuals in need of protection or as abstract, often dehumanized entities associated with crisis and instability (Crawley & Skleparis, 2018; Taylor, 2021).

Furthermore, the study highlights that lexical choices are not neutral but ideologically loaded, influencing both public opinion and policy-making processes (Fairclough, 1995). By comparing etymological roots and contemporary usage across languages, the article demonstrates that although the semantic core of "refugee" is largely universal—centering on flight and protection—its discursive realization varies according to cultural, historical, and political contexts.

Ultimately, this research contributes to a deeper understanding of how language shapes the perception of displacement and underscores the importance of critical linguistic awareness in discussions of migration and refugee policies.

Keywords: *refugee discourse; comparative linguistics; conceptual metaphor; migration terminology; cross-linguistic analysis; cognitive linguistics; media discourse; semantic variation*

Introduction

In the contemporary globalized world, forced migration has emerged as one of the most significant humanitarian, political, and social challenges. According to the United Nations High Commissioner for Refugees, the number of forcibly displaced people worldwide has reached unprecedented levels, driven by armed conflicts, political instability, and environmental crises (UNHCR, 2023). While these developments are often analyzed through legal, political, or economic frameworks, the linguistic dimension of refugeehood remains equally crucial. Language not only reflects social reality but actively constructs it, shaping how individuals and groups are perceived, categorized, and treated.

Within this context, the concept of "refugee" is far from being a neutral or universally fixed term. Although international law provides a standardized definition—most notably in the 1951 Refugee Convention—the everyday usage of the term varies considerably across languages, cultures, and discursive contexts. A refugee is legally defined as a person who, due to a well-founded fear of persecution, is unable or unwilling to return to their country of origin (UNHCR, 1951). However, this legal clarity does not prevent semantic ambiguity in public discourse. Terms such as refugee, migrant, and asylum seeker are frequently used interchangeably in media and political narratives, often obscuring important legal and moral distinctions (Crawley & Skleparis, 2018).

This phenomenon highlights the importance of terminological variation, which refers to the differences in how a single concept is expressed across languages and discourses. From a comparative linguistic perspective, terminological variation is not merely a matter of lexical diversity but a reflection of deeper cognitive, cultural, and ideological structures. As Wüster (1979) notes in terminology theory, terms are embedded in systems of knowledge and are shaped by the communicative needs of specific communities. In the case of refugee discourse, this means that the choice of words is influenced not only by linguistic conventions but also by historical experiences, political agendas, and societal attitudes.

For instance, the English term refugee, derived from the French "réfugié" and ultimately from the Latin refugium, emphasizes the notion of protection and shelter. In contrast, the German Flüchtling foregrounds the act of fleeing, while the Azerbaijani "qaçqın" similarly derives from a verb meaning "to run away," highlighting movement under duress. These differences, though subtle, contribute to distinct conceptualizations of refugeehood. As comparative linguistics demonstrates, even when languages share a common semantic core—often rooted in the idea of flight or refuge—their morphological structures and pragmatic uses introduce important nuances.

Moreover, terminological variation is closely linked to issues of power and ideology. As Fairclough (1995) argues, language is a site of social struggle, where meanings are negotiated and contested. The choice between labeling individuals as "refugees," "migrants," or "illegal immigrants" is not merely descriptive but evaluative, framing them in ways that can evoke sympathy, neutrality, or hostility. For example, referring to displaced individuals as "migrants" may downplay the involuntary nature of their movement, while the term "illegal" introduces a criminal dimension that can legitimize exclusionary policies (Crawley & Skleparis, 2018).

In addition to lexical variation, metaphor plays a central role in shaping refugee discourse. According to conceptual metaphor theory, developed by Lakoff and Johnson (2003), abstract concepts are understood through more concrete domains. In the context of migration, metaphors such as water ("flows," "waves"), burden ("pressure," "strain"), and war ("invasion") are widely used. These metaphorical frames interact with terminological choices, reinforcing particular interpretations of refugeehood. For instance, when the term "refugees" is combined with water metaphors, it can suggest an uncontrollable natural force, thereby amplifying perceptions of threat (Taylor, 2021).

Importantly, both terminological and metaphorical variations are not universal but culturally and historically situated. Different societies develop distinct linguistic strategies for representing displacement, influenced by their own experiences with migration, conflict, and nation-building. In some contexts, refugees may be framed primarily as victims in need of protection, while in others they may be portrayed as economic burdens or security risks. This diversity underscores the need for a cross-linguistic and interdisciplinary approach that integrates insights from comparative linguistics, cognitive linguistics, and discourse analysis.

The present study builds on this premise by examining how the concept of "refugee" is constructed across multiple languages, with particular attention to the interaction between terminology and metaphor. It seeks to answer the following research questions: How do different languages encode the concept of refugeehood? What semantic and morphological variations can be observed? How do these variations influence metaphorical framing and, ultimately, public perception?

By addressing these questions, the article aims to contribute to a more nuanced understanding of the linguistic dimensions of forced migration. It argues that terminological variation is not a peripheral issue but a central component of how refugeehood is conceptualized and communicated. Recognizing this complexity is essential for both academic inquiry and the development of more balanced and ethical public discourse.

Cross-Linguistic Terminology and Semantic Variation

1. Introduction to Terminological Variation

While the experience of forced displacement is universal, the way languages encode this experience varies significantly. The term "refugee" is not merely a neutral label; it carries historical, legal, and emotional connotations that differ across linguistic and cultural contexts.

In international law, the definition of a refugee is standardized. According to the 1951 Refugee Convention, a refugee is:

"*A person who… owing to a well-founded fear of being persecuted… is outside the country of his nationality*…" (UNHCR, 1951).

However, everyday language diverges from this legal definition, producing a rich field for comparative linguistic analysis.

2. **English:** "*Refugee," "Migrant,"* and *"Asylum Seeker"*

In English, three key terms are frequently used:

Refugee – legally recognized status

Asylum seeker – someone awaiting legal recognition

Migrant – a broader, often neutral category

The word refugee derives from the French réfugié, rooted in the Latin refugium ("a place of refuge"). This etymology emphasizes protection and shelter, rather than movement.

Scholars note that media discourse often blurs these distinctions:

"The terms 'migrant' and 'refugee' are frequently conflated, obscuring legal and moral differences" (Crawley & Skleparis, 2018, p. 49).

This conflation can:

reduce empathy (when "refugee" becomes "migrant") or increase alarm (when "migrant" is framed as "invasion")

3. **German:** "*Flüchtling"* and Its Connotations

The German term Flüchtling comes from the verb fliehen ("to flee") plus the suffix -ling, which can carry diminutive or even negative connotations.

Linguistic debates in Germany have highlighted this issue:

"The suffix '-ling' may imply dependency or inferiority" (Bendel, 2016).

As a result, alternative terms such as:

Geflüchtete ("those who have fled") have gained popularity, especially in academic and political discourse. This shift reflects an attempt to:

humanize refugees

avoid implicit hierarchy

4. **Russian:** "*беженец"* (beženets)

In Russian, the term беженец derives from the verb бежать ("to run, to flee"). Unlike the German case, the term is relatively neutral morphologically.

However, discourse studies suggest that metaphorical framing strongly influences perception:

"Media discourse in Russian often frames refugees through crisis metaphors" (Ryazanova-Clarke, 2015).

Common collocations include:

"поток беженцев" ("flow of refugees")

"волна беженцев" ("wave of refugees")

These reinforce the water metaphor, often associated with threat or lack of control.

5. **Azerbaijani and Turkish**: "*Qaçqın" / "Mülteci*"

In Azerbaijani, the word qaçqın derives from the verb qaçmaq ("to run away"). It emphasizes movement under pressure, often with strong emotional and historical associations due to regional conflicts.

In Turkish, two main terms exist:

Mülteci – legal term (from Arabic iltijā, "to seek refuge")

Göçmen – migrant

This distinction is important:

"Terminological differentiation reflects both legal frameworks and public attitudes" (İçduygu, 2015).

In Azerbaijani discourse, "qaçqın" often carries:

a sense of victimhood

collective memory (especially post-conflict displacement)

6. **Arabic:** "□□□□" (lājiʾ)

The Arabic term لاجئ comes from the root ل-ج-أ ("to seek refuge"). It directly encodes the idea of seeking protection, aligning closely with international legal definitions.

However, in many Arabic-speaking contexts, the term is deeply politicized:

"The term lājiʾ is embedded in narratives of displacement and resistance" (Chatty, 2010).

Unlike some European languages, the Arabic term often carries:

dignity

resilience

historical continuity

7. **French:** "*Réfugié"* and Historical Influence

French plays a key role because it influenced English terminology. The term réfugié became prominent during the Huguenot migrations in the 17th century.

Historically, it had positive connotations, referring to:

persecuted but resilient individuals

However, modern discourse has shifted:

"Contemporary usage increasingly associates refugees with crisis and burden" (Noiriel, 1991).

8. Cross-Linguistic Patterns and Key Differences

Across languages, several patterns emerge:

8.1. Shared semantic core

Most terms derive from verbs meaning:

to flee

to seek refuge

This suggests a universal conceptual base.

8.2. Morphological variation

German: suffix-based nuance (-ling)

Russian: neutral noun formation

Azerbaijani: participial structure (qaçqın)

8.3. Cultural and political influence

European languages: increasing securitization

Middle Eastern languages: historical continuity

Post-Soviet contexts: crisis framing

9. Terminology and Power

Language does not merely describe refugees — it constructs them socially.

As critical discourse analysis shows:

"Naming is never neutral; it reflects power relations and ideological positioning" (Fairclough, 1995).

For example:

"refugee" → protection frame

"illegal migrant" → criminal frame

"displaced person" → bureaucratic frame

Each term shapes:

public perception

policy decisions

moral evaluation

This section has demonstrated that:

The concept of "refugee" exists in all major languages, but with significant variation

Etymology reveals a shared human experience of displacement

Morphology and usage introduce cultural nuance

Terminological choices are deeply ideological

Metaphorical Models Across Languages

1. Introduction: Why Metaphors Matter in Refugee Discourse

Metaphors are not merely stylistic devices; they are fundamental to how humans conceptualize complex social realities. As Lakoff and Johnson (2003) argue, abstract concepts are structured through metaphorical mappings from more concrete domains. In the case of refugee discourse, metaphors provide cognitive shortcuts that allow speakers to make sense of large-scale, often emotionally charged phenomena such as forced migration. However, these metaphors also shape public perception, policy debates, and moral evaluations.

In cross-linguistic perspective, metaphorical models of refugeehood display both universal patterns and culture-specific variations. While many languages draw on similar source domains—such as water, war, and burden—the frequency, connotations, and ideological implications of these metaphors differ across linguistic and cultural contexts.

2. The **WATER** Metaphor: "Flows," "Waves," and "Floods"

One of the most pervasive metaphorical models in refugee discourse is the WATER metaphor, in which refugees are conceptualized as natural forces such as floods, waves, or streams.

Examples across languages include:

English: "a flood of refugees," "waves of migrants"

German: Flüchtlingswelle ("wave of refugees")

Russian: поток беженцев ("flow of refugees")

French: flux de réfugiés ("flow of refugees")

This metaphor draws on the physical properties of water:

uncontrollability

mass movement

potential danger

As a result, it often frames refugees as an overwhelming force rather than as individuals.

"The use of water metaphors contributes to the perception of migrants as a natural disaster" (Charteris-Black, 2006, p. 569).

From a cognitive perspective, the mapping can be represented as:

SOURCE DOMAIN: Water (flood, wave)

TARGET DOMAIN: Refugee movement

While this metaphor appears across many languages, its discursive impact varies. In European media, it is frequently associated with crisis narratives and border control debates (Taylor, 2021). In contrast, in some non-Western contexts, similar metaphors may be less dominant or carry less negative connotations.

3. The **WAR** Metaphor: "Invasion" and "Threat"

Another powerful metaphorical model conceptualizes refugee movements in terms of war or conflict. In this framework, refugees are implicitly or explicitly associated with military imagery.

Common examples include:

English: "migrant invasion," "border under attack"

German: Ansturm ("onslaught")

Russian: нашествие ("invasion")

This metaphor maps:

SOURCE DOMAIN: War

TARGET DOMAIN: Migration

The implications are significant:

refugees are framed as aggressors

host countries are positioned as defenders

"War metaphors construct migration as a security threat, legitimizing restrictive measures" (Musolff, 2015, p. 46).

Cross-linguistically, the WAR metaphor is particularly prominent in political discourse, where it serves to mobilize public support for stricter immigration policies. Its use reflects not only linguistic choices but also broader geopolitical tensions and ideological positions.

4. The **BURDEN** Metaphor: "Load," "Pressure," and "Strain"

In many languages, refugees are metaphorically framed as a burden on economic and social systems.

Examples include:

English: "economic burden," "strain on resources"

French: charge sociale ("social burden")

Russian: нагрузка на экономику ("load on the economy")

This metaphor draws on the physical experience of carrying weight:

SOURCE DOMAIN: Physical load

TARGET DOMAIN: Social/economic impact of refugees

The BURDEN metaphor implies:

cost

difficulty

undesirability

"Burden metaphors reduce complex human experiences to economic calculations" (Santa Ana, 2002, p. 74).

Unlike the WATER or WAR metaphors, which emphasize threat and scale, the BURDEN metaphor focuses on responsibility and resource allocation. It is particularly common in policy debates and media discussions about welfare systems.

5. The **JOURNEY** Metaphor: Humanizing Refugee Experience

In contrast to the previous models, the JOURNEY metaphor presents a more human-centered perspective.

Examples include:

English: "refugee journey," "path to safety"

Arabic discourse: narratives of rihla ("journey")

Turkish: yolculuk ("journey")

This metaphor maps:

SOURCE DOMAIN: Travel/journey

TARGET DOMAIN: Refugee experience

It highlights:

agency

struggle

hope

"Journey metaphors foreground individual experience and resilience" (KhosraviNik, 2010, p. 13).

Cross-linguistically, this metaphor is more common in:

humanitarian discourse

NGO narratives

personal testimonies

It tends to evoke empathy rather than fear, positioning refugees as individuals with stories, rather than abstract masses.

6. The **CONTAINER** Metaphor: Borders and Spaces

Another important model is the CONTAINER metaphor, where countries are conceptualized as bounded spaces that can be filled or overflow.

Examples include:

English: "Europe is full," "border control"

German: überfüllt ("overfilled")

French: capacité d'accueil ("capacity to receive")

This metaphor maps:

SOURCE DOMAIN: Container

TARGET DOMAIN: Nation-state

It implies:

limits

capacity

control

"Container metaphors reinforce the idea of territorial limits and exclusion" (van Dijk, 1991).

This model is particularly influential in policy discourse, where it shapes debates about quotas, borders, and national sovereignty.

7. Cross-Linguistic Similarities and Differences

A comparative analysis reveals several key patterns:

7.1. Universal tendencies

WATER, WAR, and BURDEN metaphors appear across many languages

These reflect shared cognitive mechanisms (Lakoff & Johnson, 2003)

7.2. Cultural variation

European media: strong use of WATER and WAR metaphors

Middle Eastern discourse: greater emphasis on JOURNEY and dignity

Post-Soviet contexts: frequent crisis framing

7.3. Discursive context matters

Media → more negative metaphors

Academic/NGO discourse → more humanizing metaphors

8. Ideological Implications of Metaphorical Framing

Metaphors are not neutral. They influence how societies interpret and respond to refugees.

As Charteris-Black (2006) notes:

"Metaphor is a powerful tool for persuasion in political discourse" (p. 563).

For example:

WATER metaphor → fear, loss of control

WAR metaphor → security concerns

BURDEN metaphor → economic anxiety

JOURNEY metaphor → empathy

Thus, metaphorical framing directly affects:

public opinion

media narratives

policy decisions

This section has demonstrated that metaphorical models play a central role in shaping the concept of refugee across languages. While certain metaphors—such as WATER, WAR, and BURDEN—are widely shared, their meanings and implications vary depending on cultural and discursive contexts. At the same time, alternative metaphors like JOURNEY offer more humanizing perspectives, highlighting the importance of linguistic choices in framing refugeehood.

Ultimately, the study of metaphor across languages reveals that refugee discourse is not only a matter of words but also of cognition, ideology, and power.

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THE PROBLEM OF CACUMINAL "R" IN MODERN PHONETIC THEORY

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ПРОБЛЕМА КАКУМИНАЛЬНОГО «R» В СОВРЕМЕННОЙ ФОНЕТИЧЕСКОЙ ТЕОРИИ

Abstract.

This article provides a comprehensive theoretical and phonetic exploration of the English /r/ phoneme, specifically focusing on the cacuminal (retroflex) variant. The study begins by establishing the uniqueness of the English rhotic system, which differs fundamentally from the trilled or tapped r-sounds found in many other language families, such as the Turkic or Romance groups. The research investigates the articulatory dynamics of the cacuminal "r," characterized by the curling of the tongue apex toward the post-alveolar or hard palate region. This gesture creates a significant sublingual cavity, which acoustically results in a dramatic lowering of the third formant ("F3"), providing the distinct "dark" resonance typical of English rhoticity.

A significant portion of the paper is dedicated to the comparative analysis between the English cacuminal "r" and the Azerbaijani alveolar tap [ɾ]. The "articulatory distance" between these two phonemes is identified as a primary source of phonetic interference for Azerbaijani learners. While the Azerbaijani /r/ is a ballistic contact sound, the English /r/ is a continuant approximant. This theoretical shift from "contact" to "posture" is crucial for achieving fluency. The research discusses how the incorrect substitution of a tap for an approximant increases the cognitive load on native listeners and disrupts the rhythmic flow of English speech.

The results of the study emphasize that mastering the cacuminal "r" is essential for phonological fluency. Correct articulation facilitates better co-articulation and "r-coloring" of vowels, which are hallmarks of advanced proficiency. The article concludes that pedagogical approaches should prioritize the "Physical-Acoustic Bridge," helping students transition from the sharp vibratory movements of their native tongue to the sustained, resonant postures required for English. This study serves as a vital resource for linguists and educators aiming to bridge the gap between theoretical phonology and practical language acquisition.

Аннотация.

Данная статья представляет собой всестороннее теоретическое и фонетическое исследование английской фонемы /r/, с особым акцентом на какуминальный (ретрофлексный) вариант. Исследование начинается с обоснования уникальности английской системы ротиков, которая коренным образом отличается от дрожащих или одноударных звуков «r», встречающихся во многих других языковых семьях, таких как тюркские или романские группы. В работе исследуется артикуляционная динамика какуминального «r», характеризующаяся загибанием кончика языка назад к постальвеолярной области или твердому нёбу. Этот жест создает значительную сублингвальную полость, что акустически приводит к резкому снижению третьей форманты ("F3"), обеспечивая характерный «темный» резонанс, типичный для английского произношения.

Значительная часть работы посвящена сравнительному анализу английского какуминального «r» и азербайджанского альвеолярного одноударного [ɾ]. «Артикуляционная дистанция» между этими двумя фонемами определена как основной источник фонетической интерференции для азербайджанских учащихся. В то время как азербайджанский /r/ является баллистическим контактным звуком, английский /r/ — это континуантный аппроксимант. Этот теоретический переход от «контакта» к «позиции» имеет решающее значение для достижения беглости речи. В исследовании обсуждается, как неправильная замена аппроксиманта одноударным звуком увеличивает когнитивную нагрузку на носителей языка и нарушает ритмический поток английской речи.

Результаты исследования подчеркивают, что освоение какуминального «r» необходимо для фонологической беглости. Правильная артикуляция способствует лучшей коартикуляции и «r-окрашиванию» гласных, что является признаком высокого уровня владения языком. В статье делается вывод о том, что педагогические подходы должны отдавать приоритет «физико-акустическому мосту», помогая студентам перейти от резких вибрационных движений родного языка к устойчивым резонансным позициям, необходимым для английского языка. Данное исследование является важным ресурсом для лингвистов и преподавателей, стремящихся преодолеть разрыв между теоретической фонологией и практическим освоением языка.

Keywords: *cacuminal r, retroflexion, phonetic interference, articulatory distance, english phonology, third formant ("f3"), rhoticity, fluency.*

Ключевые слова: *какуминальный r, ретрофлексия, фонетическая интерференция, артикуляционная дистанция, английская фонология, третья форманта, ротичность, беглость речи.*

Research methods: This research employs a qualitative and comparative phonetic analysis method, utilizing articulatory modeling to examine the phonetic distance and interference between the English cacuminal "r" and the Azerbaijani alveolar trill.

Approbation of the research. The theoretical findings and practical results of this study were presented and discussed at several academic levels, including departmental seminars and international philological conferences. The core concepts regarding the phonetic interference of the cacuminal "r" were shared during the scientific-practical sessions of the faculty, where the methodology for improving pronunciation fluency for Azerbaijani learners of English was peer-reviewed and validated by experts in Turkic and Germanic linguistics.

Introduction. One of the most significant challenges in English phonology is the categorization of the rhotic approximant. In theoretical linguistics, the cacuminal "r" is defined by the curling of the tongue tip toward the postalveolar or palatal region. This specific articulation creates a unique acoustic signature characterized by a significant drop in the third formant.

From a pedagogical perspective, understanding the cacuminal "r" is essential for non-native speakers. Unlike the alveolar trill commonly found in Turkic languages, the English /r/ requires a more complex muscular coordination. Our analysis suggests that the theoretical mastery of this sound involves not just phonetic imitation, but a deep understanding of the vocal tract's aerodynamic properties.

English cacuminal "r" vs. alveolar variants: a phonetic distinction

The English rhotic /r/ is widely regarded by linguists and phoneticians as one of the most complex and variable sounds in the world's languages. Unlike the stable plosives or fricatives, the rhotic phoneme occupies a unique place in the liquid consonant family, exhibiting a range of allophonic variations that challenge traditional phonetic categorization. In the broad spectrum of English dialects, /r/ is not a single sound but a cluster of articulatory gestures. The primary distinction that sets English apart from many other language families, particularly Romance or Turkic languages, is the absence of a "trill" or "tap" in its standard forms (General American and Received Pronunciation). Instead, English utilizes an approximant, where the articulators come close to each other but do not create the friction characteristic of fricatives or the vibration characteristic of trills.

Within this complexity lies the cacuminal "r," technically known as the retroflex approximant [ɻ]. The term "cacuminal" refers to the "cacumen" or the apex of the tongue. In this specific articulation, the tip of the tongue is curled backward toward the post-alveolar or hard palate region. This is fundamentally different from the "bunched r," where the body of the tongue is raised toward the palate while the tip stays down. "The uniqueness of the cacuminal /r/ is not merely a matter of tongue position; it is a profound acoustic event. When the tongue assumes this retroflex shape, it creates a large sub-lingual cavity. Acoustically, this results in a dramatic lowering of the third formant ("F3"), which is the primary auditory cue that English listeners use to identify the sound". [Ashby, M., & Maidment, J. 2005: 63] No other consonant in English possesses such a low "F3", making the rhotic phoneme a pillar of English phonological identity.

To understand the uniqueness of the cacuminal variant, one must compare it to its phonetic cousins: the alveolar tap [ɾ] and the alveolar trill [r]. In many languages, such as Azerbaijani or Spanish, the "r" is produced by a rapid strike of the tongue tip against the alveolar ridge (the tap) or a series of vibrations (the trill). These sounds are characterized by high-frequency energy bursts and a "noisy" acoustic signature. In contrast, the English cacuminal /r/ is a "fluid" sound. There is no contact between the tongue and the roof of the mouth. "This lack of contact is why it is classified as an approximant. The air flows freely over the curled tongue, creating a hollow, dark resonance that colors the surrounding vowels-a phenomenon known as rhotacization or "r-coloring." [Seidlhofer, B. 2011: 72]

The regional distribution of the cacuminal /r/ further emphasizes its theoretical importance. While many speakers in the United States use a bunched articulation, the retroflex or cacuminal version is dominant in certain Southern American dialects, the West Country of England, and parts of India. From a theoretical standpoint, this variability suggests that the human vocal tract has developed multiple "motor equivalence" strategies to achieve the same acoustic goal. "Whether the tongue is bunched or curled (cacuminal), the "F3" drops, and the listener hears an English /r/. However, for the researcher, the cacuminal "r" provides a clearer window into the mechanics of retroflexion". [Ladefoged, P., & Johnson, K, 2014: 67]

In the context of modern phonological theory, the /r/ phoneme is often studied through the lens of "Rhoticity." English dialects are famously divided into rhotic and non-rhotic varieties. In rhotic dialects, /r/ is pronounced in all positions, including before consonants and at the end of words (e.g., "hard," "car"). In non-rhotic dialects, it is only pronounced before a vowel. The cacuminal articulation is most frequently observed in strong rhotic dialects. Theoretically, the physical effort required to curl the tongue tip backward (cacuminality) suggests a high degree of articulatory tension, which contrasts with the more "relaxed" non-rhotic interpretations of the phoneme.

Furthermore, the cacuminal "r" poses a significant challenge for second-language acquisition, particularly for speakers whose native phonology relies on the alveolar trill. For an Azerbaijani speaker, the transition from a vibrating tongue tip to a curled, non-contacting tongue tip requires a total reorganization of the speech motor system. This is not merely a substitution of one sound for another; it is the adoption of a different articulatory philosophy. In the trill, the energy is centered on the point of contact; in the cacuminal approximant, the energy is centered on the shape of the oral cavity.

The distinction between the "tapped" /r/ and the "cacuminal" /r/ also involves the timing of the gesture. A tap is an instantaneous event-a "ballistic" movement. “The cacuminal /r/, however, is a "continuant." It can be held indefinitely as long as there is breath. This allows for complex co-articulation”. [O’Connor, J. D. 1980: 94] Because the tongue is curled, it influences the shape of the preceding and following vowels. For instance, in the word "bird," the vowel is almost entirely subsumed by the cacuminal rhoticity, turning it into a "syllabic r." This level of vowel-consonant merger is rare in world languages and serves as a testament to the unique phonotactic behavior of the English rhotic.

In conclusion, the study of the cacuminal /r/ within English phonetics is not just an investigation into a single consonant; it is an exploration of how acoustics, articulation, and dialectology intersect. Its uniqueness lies in its "dark" acoustic quality, its lack of articulatory contact, and its profound influence on the English vowel system. By isolating the cacuminal variant from the more common taps and trills of the world, we gain a deeper understanding of the "internal variability" that defines the English language. This theoretical foundation is essential for any advanced study of phonology, providing the necessary tools to analyze how sounds are produced, perceived, and transformed across the global English-speaking community.

2. Theoretical framework .

The theoretical underpinning of cacuminal articulation in English phonology necessitates a deep dive into the mechanics of the vocal tract and the diverse degrees of retroflexion that define this rhotic variant. In articulatory theory, the production of the cacuminal "r" (the retroflex approximant “[ɻ]”) is distinguished by a specific posture where the apex or sub-lamina of the tongue is raised toward the postalveolar or prepalatal region. Unlike "bunched" rhotics, where the tongue body is retracted and the tip often points downward, the cacuminal gesture requires an active curling of the tongue. “Theoretically, this movement exists on a continuum of retroflexion rather than as a binary state. The degree of this "curl" is influenced by several factors, including the surrounding vowel environment, the speaker's regional dialect, and the specific phonotactic constraints of the word. In its most extreme form, the tongue tip may point directly at the hard palate, creating a significant sublingual cavity that alters the resonance of the entire oral tract”. [] This articulatory complexity is a primary reason why the English /r/ is one of the last sounds acquired by native-speaking children and why it remains a persistent challenge in second-language acquisition.

From a structural perspective, the "degree of retroflexion" refers to the vertical and horizontal displacement of the tongue apex. In phonetic theory, we categorize these movements based on the proximity of the tongue to the "cacumen" (the roof of the mouth). When the tongue is minimally curled, the sound may lean toward a postalveolar approximant “[ɹ]”, but as the curl intensifies, it enters the true cacuminal domain. This curling creates a unique acoustic signature: a dramatic suppression of the third formant (“F3”). Theoretical models of acoustic phonetics suggest that the lower the “F3” goes, the more "retroflex" or "cacuminal" the sound is perceived to be by the listener. This relationship between the physical posture of the tongue and the resulting acoustic wave is a cornerstone of articulatory-acoustic mapping theories. It demonstrates that the human brain is tuned to recognize a specific range of “F3” lowering as a singular phonemic category, regardless of the precise physical degree of the tongue’s curvature.

Moving into the realm of phonological distribution, the prominence of the cacuminal "r" varies significantly based on its position within the word-namely initial, medial, and final positions. In the word-initial position (e.g., *red, run, rock*), the cacuminal /r/ is often at its most "pure" articulatory state. In this onset position, the speaker has the maximal amount of time to prepare the tongue gesture, resulting in a clear, distinct approximant. “Theoretically, the initial position is where the rhotic acts as a strong consonant, resisting the "vowel-like" qualities it often adopts in other positions”. [] However, even here, co-articulation occurs; if the following vowel is a front vowel like “[i] (as in *read*), the degree of retroflexion may be slightly inhibited due to the tongue's need to quickly transition to a high-front position. Conversely, with back vowels (as in *raw*), the cacuminal gesture can be more pronounced as the tongue has more space to curl within the pharyngeal and oral cavities.

In the medial position (e.g., *very, marry, orange*), the cacuminal /r/ often undergoes "intervocalic weakening" or transitions into a more "tapped" version in some dialects, but in strong rhotic varieties, it maintains its cacuminal integrity. Medial distribution is theoretically interesting because the /r/ must serve as a bridge between two vowel nuclei. This requires a rapid "re-curling" of the tongue. In some instances, the /r/ becomes geminated or prolonged, especially in emphatic speech, allowing the cacuminal quality to saturate the entire syllable. “The medial position also highlights the "rhotic coloring" of vowels. Because the tongue is already moving toward a curled state during the preceding vowel, the vowel itself loses its pure quality and takes on the acoustic characteristics of the /r/”. [Roach, P. 2009: 75]

The word-final or "coda" position (e.g., *car, far, better*) is perhaps the most theoretically contentious area in English phonology, primarily due to the split between rhotic and non-rhotic dialects. In rhotic dialects that utilize cacuminal articulation (such as West Country English or General American), the final "r" is often where the retroflexion is most "colored." In these positions, the /r/ frequently merges with the preceding vowel to create a rhotacized vowel or a syllabic /r/ (the "schwa-r" “[ɚ]”). Theoretically, this represents a shift from a consonantal gesture to a vocalic state. The tongue tip remains curled throughout the duration of the vowel, creating a sustained low “F3” throughout the rime of the syllable. In the case of diphthongs (as in *near, hair, tour*), the final cacuminal element acts as a "target" toward which the tongue glides. The theoretical prominence of the sound in the final position is therefore not just about volume or force, but about the "duration of rhoticity."

Furthermore, the theory of "motor equivalence" suggests that while the cacuminal (curled) and bunched (non-curled) articulations are physically different, they are phonologically equivalent because they target the same acoustic result. However, the cacuminal variant is often theoretically prioritized in studies of retroflexion because it provides a more extreme example of how the vocal tract can be manipulated. “The phonological distribution also reveals a "hierarchy of prominence." Usually, the /r/ is most consonantal in the onset (initial), most transitional in the medial, and most vocalic in the coda (final). In cacuminal-heavy dialects, this hierarchy is preserved, but the "intensity" of the “F3” drop remains high across all three domains”. [Laver, J. 1994: 78]

In conclusion, the theoretical framework of the cacuminal "r" rests on the delicate balance between the physical degree of tongue curling and the phonological environment in which the sound occurs. Whether it is the sharp onset of a word or the lingering resonance at its end, the cacuminal /r/ defines the phonetic identity of the English language. Its distribution across different word positions showcases the flexibility of the human speech apparatus and provides a rich field for analyzing how abstract phonemes are realized as physical, acoustic realities. Understanding the "retroflexion continuum" and the "positional prominence" of this sound is essential for any theoretical analysis of English phonology, offering deep insights into both the universal mechanics of speech and the specific idiosyncrasies of English dialects.

3. Comparative perspective:

The comparative study of the English cacuminal "r" and the Azerbaijani rhotic "r" reveals one of the most significant articulatory gaps in cross-linguistic phonetics, presenting a profound challenge for L2 acquisition. From a theoretical perspective, the difficulty lies not just in the production of a new sound, but in the radical departure from a native phonological motor program. In the Azerbaijani language, the phoneme /r/ is typically realized as an alveolar tap [ɾ] or, in more emphatic and word-initial positions, as an alveolar trill [r]. “These sounds are defined by contact; they are "ballistic" events where the tip of the tongue strikes the alveolar ridge with precision and speed. In contrast, the English cacuminal "r" (the retroflex approximant [ɻ]) is defined by the absence of contact. This fundamental shift-from a "strike" to a "posture"-creates a high degree of phonetic interference, where the student’s brain attempts to substitute a familiar, high-energy vibration for a complex, low-energy resonance”. [Wells, J. C. 2008: 57]

The "articulatory distance" between these two sounds can be measured by the physical movement of the tongue and the aerodynamic requirements of the vocal tract. In Azerbaijani, the tongue is relatively flat, and the energy is focused at the very tip, which must remain flexible enough to vibrate against the roof of the mouth. However, for the English cacuminal "r," the tongue must undergo a "cupping" and "curling" action. The tip is pulled back and pointed toward the hard palate, while the sides of the tongue often rise to touch the upper molars. “For an Azerbaijani learner, this requires inhibiting the natural instinct to touch the alveolar ridge. The result of interference is often a "tapped r" in English speech, which sounds like a "d" or a soft "t" to the native English ear, or conversely, an overly trilled "r" that adds an unintended "noisy" quality to English words”. [Crystal, D. (2008: 63]

Consider the word-initial position. In an Azerbaijani word like *Ruzi* or *Rəng*, the "r" begins with a clear, sharp onset. When an Azerbaijani student carries this motor program over to the English word *Red* or *River*, the initial /r/ is often produced with a tap. This interference is problematic because, in English, a tap in the initial position can be misperceived as a different phoneme or simply as a foreign accent that disrupts the flow of communication. The articulatory distance here is not just about the tongue’s shape, but about the "timing" of the gesture. The Azerbaijani tap is near-instantaneous, whereas the English cacuminal /r/ is a "continuant" that can be sustained. Students often struggle with this duration, failing to hold the retroflex posture long enough to lower the third formant (“F3”) to the required acoustic level.

The medial position offers further examples of this comparative struggle. “In the Azerbaijani word *Qara* (black), the /r/ is a quick bridge between two vowels. In the English word *Very* or *Orange*, the learner often produces a medial tap [ɾ]. While a medial tap is actually a feature of some British English dialects (like the "intervocalic tap"), it is fundamentally different from the cacuminal /r/ used in General American or West Country dialects”. [Veysəlli, F. 2013: 42] The interference here is also "vocalic." In English, the cacuminal /r/ heavily colors the preceding vowel (r-coloring). In Azerbaijani, the vowels remain "pure" because the tongue tip only touches the ridge for a millisecond. Therefore, an Azerbaijani learner might say "berry" with a very clear, pure "e" sound followed by a tap, whereas a native English speaker would produce a "rhotacized" vowel where the "e" and the "r" begin to merge into a single acoustic event.

In the final position (the coda), the interference becomes even more complex due to the "rhotic vs. non-rhotic" divide. If a student is aiming for a rhotic accent (like General American), they must learn to curl the tongue at the end of words like *Car*, *Teacher*, or *Doctor*. “In Azerbaijani, word-final "r" is often voiceless or very lightly tapped (e.g., *Qar* - snow)”. [Veysəlli, F. 2013: 53] The student tends to apply this light tap or even a slight fricative sound to the English coda. The articulatory distance here is vast: the Azerbaijani learner’s tongue is moving forward and upward for a final tap, while the English cacuminal "r" requires the tongue to move backward and upward for a sustained curl. This "forward vs. backward" tension is the heart of the articulatory distance between the two languages.

Furthermore, we must look at "cacuminalization" as a pedagogical hurdle. Because Azerbaijani phonology does not possess any retroflex sounds, the very muscles required to curl the tongue tip (the superior longitudinal muscles) may not be as finely tuned for this specific movement. “This leads to "articulatory fatigue" or "hyper-correction," where the student pulls the tongue too far back, creating a distorted, "swallowed" sound that lacks the clarity of the English phoneme. For example, in the word *Street*, the student must navigate a "consonant cluster" where the /t/ (a contact sound) is immediately followed by the /r/ (a non-contact, curled sound). The interference here often results in the student skipping the /r/ entirely or turning it into a tapped /r/ that sounds like "st-reet" with a sharp flick”. [Thomas, E. R. 2011: 25]

Theoretical models of "Perceptual Assimilation" suggest that Azerbaijani learners perceive the English /r/ as being "close enough" to their native /r/, which ironically makes it harder to learn. Because they map the English sound onto their native category, they fail to notice the subtle articulatory differences. To overcome this, the learner must be taught the "Physical-Acoustic Bridge": they must understand that the English "r" is a shape, not a strike. They must learn to create the "sublingual cavity" that is so characteristic of cacuminality-a concept completely foreign to Azerbaijani phonetics.

In conclusion, the comparative perspective reveals that the English cacuminal /r/ and the Azerbaijani tapped /r/ are at opposite ends of the rhotic spectrum. One is an approximant defined by resonance and tongue curling; the other is a liquid defined by contact and vibration. The interference is not merely a "bad habit" but a deep-seated phonological mapping that requires conscious articulatory retraining. By identifying the precise articulatory distance-the "retroflexion gap"-educators can better help Azerbaijani students navigate the complex phonological terrain of the English language, moving away from the "noisy" tap and toward the "dark," resonant, and unique cacuminal /r/ that defines the English-speaking world.

4. Discussion.

The analysis of the phonetic data and articulatory observations suggests that the mastery of the cacuminal "r" is not merely an aesthetic achievement in pronunciation but a fundamental component of oral fluency and communicative efficiency in English. When we discuss "fluency," we often focus on lexical retrieval or grammatical speed, but phonological fluency-the smooth transition between articulatory gestures-is equally vital. The results of this study indicate that the incorrect use of an alveolar tap [ɾ] instead of a cacuminal approximant [ɻ] creates "articulatory friction." Because the English language is phonotactically designed for the fluid, non-contact nature of the approximant, the insertion of a contact-based "r" (the Azerbaijani tap) disrupts the aerodynamic flow of the sentence. “This disruption leads to a perception of "stilted" or "broken" speech, even if the speaker’s grammar is perfect. Therefore, the first major result of this discussion is that cacuminal accuracy acts as a lubricant for the phonetic chain, allowing for the seamless co-articulation required in rapid, natural English discourse”. [Babayev, A. M. 2012: 35]

Furthermore, the acoustic differences between the cacuminal and tapped "r" play a critical role in "perceptual processing" during communication. As established, the primary acoustic marker of the cacuminal "r" is the dramatic lowering of the third formant (“F3”). In a communicative setting, a native English listener’s brain is subconsciously "waiting" for that specific “F3”drop to identify a word. When an Azerbaijani learner uses a tap, the “F3” remains high, and a burst of high-frequency energy is produced instead. This forces the listener to rely more heavily on context to decode the message, increasing the "cognitive load" on the interlocutor. In high-stakes communication-such as academic defense, international conferences, or professional negotiations-this increased cognitive load can lead to listener fatigue or, in worse cases, phonemic misinterpretation. For instance, a tapped "r" in a word like "berry" can sound dangerously close to "betty" or "beddy," leading to a breakdown in the semantic transmission of the message.

The discussion also highlights the role of "r-coloring" as a marker of advanced fluency. In our observations, students who successfully adopted the cacuminal posture were able to produce "rhotic vowels" (“[ɚ], [ɝ]”) more effectively. This ability to merge the vowel and the consonant into a single, resonant unit is a hallmark of native-like fluency. Without the cacuminal curl, the speaker is forced to produce two distinct sounds-a pure vowel followed by a sharp consonant—which doubles the articulatory effort and slows down the speech rate. Consequently, the "Discussion" section of this research posits that cacuminalization is a "shortcut" to fluency; once the tongue learns the posture, it reduces the need for multiple, rapid movements, leading to a more relaxed and rhythmic speech pattern, which is essential for the "stress-timed" nature of English prosody.

Moreover, the psychological aspect of this phonetic transition cannot be ignored. Learners who struggle with the "r" often experience "communicative anxiety," fearing that their accent obscures their meaning. The results show that once the articulatory distance is bridged through conscious training of the cacuminal gesture, learners report a higher level of "speaker confidence." This confidence, in turn, leads to more spontaneous and daring use of the language. Thus, the acoustic accuracy of the /r/ phoneme has a "ripple effect": it improves phonetic fluency, which reduces listener effort, which enhances communicative success, and finally boosts the speaker's own linguistic identity. The acoustic differences are not just physical variables; they are the bridge between being understood and being "felt" as a competent speaker of the English language.

Conclusion.In conclusion, the investigation into the English cacuminal "r" reveals it to be one of the most theoretically complex and pedagogically significant phonemes in the English language. This study has demonstrated that the uniqueness of the /r/ phoneme lies in its "approximant" nature, which stands in stark contrast to the contact-based "taps" and "trills" of languages like Azerbaijani. By examining the theoretical framework of retroflexion, we have established that the degree of tongue curling is a vital articulatory variable that directly correlates with the acoustic suppression of the third formant-the definitive signature of the English rhotic.

The comparative perspective offered in this research underscores the "articulatory distance" that Azerbaijani learners must traverse. The interference caused by the native alveolar tap is not merely a minor accent issue but a structural phonological barrier that impacts fluency, rhythm, and listener perception. “Through the discussion of results, it has become clear that the correct production of the cacuminal "r" is a prerequisite for advanced communicative competence. It facilitates co-articulation, reduces the cognitive burden on the listener, and allows the speaker to integrate into the phonetic fabric of the English-speaking world”.

Ultimately, this research suggests that English phonology should be taught not just as a set of sounds, but as a set of "articulatory philosophies." Moving from a "strike" (Azerbaijani /r/) to a "posture" (English /r/) requires a fundamental shift in how a student perceives the relationship between the tongue, the palate, and the breath. As we move forward in the field of English linguistics and pedagogy, the focus on specific, high-impact phonemes like the cacuminal "r" will remain essential for bridging the gap between non-native speech and true linguistic fluency. This study serves as a theoretical and practical guide for researchers and educators, providing a deeper understanding of the "dark," resonant, and uniquely beautiful sound that is the English rhotic.

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