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THE SOCIAL PEDIATRIC PROTECTION FUND

Date of Foundation: 30.09.1998
Date and Number Of Registration: #147 9.10. 1998w
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Georgia (eu) Aim Social Pediatric Protection Fund is to execute programs of social pediatric development and maintain rights and healthcare of Children, Mothers and Adolescents. Fund has great organizational experience, technical equipment and skilled members.

Most of the members are Professors at TSMU, who have clinical and educational experience of 15-20 years and were one of the first, Before the independence, to read lectures about congenital infections, sexually transmitted diseases and prevention of HIV. Fund is also cooperating with physicians, psychologists, Lawyer (who operate in field of social assistance) and Public figures. By the joint forces of all the people above said SPPF is able to hold free medical examinations, juridicial consultations, charity events, informational lectures about healthy way of life, congenital infection, HIV, Social subjects and etc.

Since 1997 more than 93.000 Children and Hundreds of older people have been medically for free in the framework of charity events. Before Independence, The active members of SPPF and their consortium in 1980-1990 examined above 124 000 Children, all over Georgia.

Editor-in-Chief
FUYONG JIAO
MD Prof and Head Children's Hospital of Shaanxi Provincial People's Hospital of Xi, an Jiaotong University, The Society of Promotion Children's Health of Shaanxi Province. Executive Councillor of ISPCAN (China)

1. Shaanxi International Medical Exchange Promotion Association（SIMEA）
Date of establishment: June 1994
Registration number: 51610000520157511D
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SIMEA was established in 1994 with the approval of the Shaanxi Provincial Department of Civil Affairs. It is a first-level social organization under the charge of the Shaanxi Provincial Health and Family Planning Commission. The concept of "seeking well-being" will give full play to the advantages and characteristics of the gathering of experts, a wide range of disciplines, and a sound network, aiming to build a platform for international medical exchanges and mutual learning.

2. Children's Hospital of Shaanxi Provincial People's Hospital
Date of establishment: 1950
Address: No. 256, Youyi West Road, Beilin District, Shaanxi Province
Contact: Fuyong Jiao

Since its establishment in 1950, the Children's Hospital of Shaanxi Provincial People's Hospital has experienced more than 70 years of development. It is now the Children's Hospital of the Third Affiliated Hospital of Xi'an Jiaotong University. It is a children's hospital integrating medical treatment, teaching, and scientific research. Shaanxi Province Kawasaki Disease Diagnosis and Treatment Center, Shaanxi Province Pediatrics Clinical Medicine Research Center, National Drug Research Institute (Children Neuromedicine Specialty), Shanghai Cooperation Organization Hospital Cooperative Alliance International Exchange Center, and China Kawasaki Disease Website (ww.chinakd.org) have been established.), European Center for Traditional Chinese Medicine (Prague). Insist on innovating the "send out and invite in" communication methods for academic exchanges and scientific research cooperation.

3.The Institution of Shaanxi Province Clinical Medicine Demonstration International Science and Technology Cooperation
Established time: 2020
Address: No. 256, Youyi West Road, Beilin District, Xi'an City, Shaanxi Province
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The Shaanxi Provincial Clinical Medicine Demonstration International Science and Technology Cooperation Base was established in 2020. It is an organization approved by the Shaanxi Provincial Department of Science and Technology to promote international cooperation and exchanges in clinical medicine and guide the province to carry out international cooperation and exchanges in clinical medicine. The cooperation base is set up in Shaanxi Provincial People's Hospital. Actively expand foreign medical resources, and provide a lasting communication channel for domestic medical and health institutions and public health service units to learn international advanced management experience and strengthen the training of talent teams.

THE SOCIAL PEDIATRIC PROTECTION FUND

Shaanxi International Medical Exchange Promotion Association (SIMEA)
Children's Hospital of Shaanxi Provincial People's Hospital
Institution of Shaanxi Province Clinical Medicine Demonstration International
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PREFACE

Children is the hope of society, the future of world and mankind!

Strong children make the world strong! In order to strengthen international medical academic exchanges and improve the diagnostic and therapeutic skills of pediatricians, nurses and general practitioners around the world, the international Journal of Pediatrics was organized by the joint efforts of pediatricians and general practitioners from China, Georgia, Poland, The Czech Republic, Turkmenistan and India et al . This journal is of great clinical significance and academic value to promote international communication among pediatric medical staff and improve the diagnostic and treatment technology level of pediatric diseases. We hope that with our joint efforts and hard work, this journal will take root, sprout and grow in the world, bringing good news to the health of children around the world and benefiting children all over the world!

GEORGE CHAKHUNASHVILI (Georgia) and FUYONG JIAO (China)

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THE ACADEMY OF HUMANITIES AND ARTS SCIENCES OF GEORGIA – 31 YEARS OF INTELLECTUAL AND CULTURAL LEADERSHIP

SUMMARY

The Academy of Humanities and Arts Sciences of Georgia celebrates its thirty-first anniversary in 2025, marking a distinguished journey of intellectual and cultural contribution. Founded in 1994 during a period of political and social transformation, the Academy has consistently provided a space for independent scholarly inquiry, artistic innovation, and ethical reflection. Over the years, it has united historians, philosophers, linguists, literary scholars, and artists, contributing to the preservation of national heritage, the promotion of the Georgian language, and the advancement of contemporary humanistic thought.

Youth engagement and academic renewal are central to the Academy's strategic vision. Through open calls, mentorship programs, research grants, and artistic residencies, young scholars and creators are empowered to participate in national intellectual life and regional initiatives. Furthermore, the Academy actively promotes cultural diplomacy and international dialogue, fostering partnerships with foreign institutions, supporting translation projects, and facilitating access to Georgian scholarly and artistic production worldwide.

Looking forward, the Academy prioritizes independent thought, cultural dialogue, institutional strengthening, and public engagement. Its enduring mission is to harmonize tradition with innovation, national identity with global cooperation, and scholarly rigor with societal impact. The thirty-one-year legacy of the Academy demonstrates the vital role of humanities and arts in shaping both national consciousness and international cultural understanding.

Keywords: *The Academy, Humanities and Arts Sciences,cultural diplomacy, international dialogue, fostering partnerships,foreign institutions, supporting translation projects, facilitating access, artistic production worldwide.*

I. INTRODUCTION

In 2025, The Academy of Humanities and Arts Sciences of Georgia enters the thirty-first year of its institutional existence. This anniversary represents far more than a chronological milestone; it marks a sustained intellectual journey shaped by responsibility toward national culture, humanitarian values, and scholarly integrity. Over three decades, the Academy has established itself as a meaningful intellectual space where scientific thought, artistic creativity, and ethical reflection converge.

The humanities and the arts occupy a unique role in the life of a nation, particularly in societies that have experienced political transformation, cultural disruption, and identity challenges. In this context, The Academy of Humanities and Arts Sciences of Georgia has consistently served not only as an academic institution but also as a guardian of cultural continuity and a platform for free and independent thought. Its mission has been ground-

ed in the belief that national resilience depends not solely on economic or political strength, but equally on culture, language, historical memory, and intellectual freedom.

The thirty-first anniversary invites reflection on the Academy's past achievements, acknowledgment of the individuals who shaped its identity, and a forward-looking assessment of its role in contemporary Georgia. This moment in time encourages the Academy to reaffirm its foundational principles while adapting to new academic, technological, and social realities. The present article aims to outline this journey-tracing the historical origins of the Academy, examining its intellectual legacy, and articulating its strategic vision for the future.

II. HISTORICAL CONTEXT: FOUNDATION AND EARLY DEVELOPMENT (1994–2000S)

The Academy of Humanities and Arts Sciences of Georgia was founded in 1994, during one of the most complex and fragile periods in the modern history of the Georgian state. The early years of independence were marked by political instability, economic hardship, and a profound crisis of social orientation. In such an environment, the establishment of a humanitarian and artistic academic institution was not a conventional academic initiative, but a deliberate and courageous act of intellectual resistance.

At a time when immediate survival often overshadowed long-term cultural considerations, the founders of the Academy recognized that neglecting the humanities and the arts would result in irreversible damage to national consciousness. The creation of The Academy of Humanities and Arts Sciences of Georgia was therefore an assertion that intellectual life must not be suspended, even in times of uncertainty. On the contrary, it was precisely during this period that historical awareness, philosophical reflection, artistic expression, and linguistic scholarship were most urgently needed.

From its inception, the Academy brought together distinguished representatives of various disciplines—historians, philosophers, philologists, art historians, writers, artists, and cultural theorists. These individuals did not merely contribute academic expertise; they embodied moral authority and intellectual responsibility. Through scholarly publications, public lectures, artistic projects, and critical discourse, the Academy gradually shaped a space where national and universal values could be examined in dialogue.

III. INTELLECTUAL LEGACY AND KEY CONTRIBUTIONS

Throughout its thirty-one-year history, The Academy of Humanities and Arts Sciences of Georgia has cultivated a rich intellectual legacy grounded in interdisciplinary dialogue and cultural responsibility. The Academy's members have contributed significantly to the preservation, interpretation, and advancement of Georgian historical memory, philosophical thought, literary heritage, and artistic expression.

One of the Academy's defining characteristics has been its ability to unite diverse humanitarian and artistic disciplines within a shared conceptual framework. Historical research conducted under the auspices of the Academy has emphasized continuity between Georgia's past and present, reinforcing national self-awareness while situating Georgian history within broader regional and global narratives. Philosophical and ethical studies have addressed fundamental questions of identity, freedom, and moral responsibility-issues that remain particularly relevant in periods of social transformation.

The Academy has also played an essential role in safeguarding and promoting the Georgian language and literature. Linguistic scholarship, critical editions, and literary analysis produced by members of The Academy of Humanities and Arts Sciences of Georgia have contributed to the preservation of linguistic integrity and the development of contemporary literary discourse. These efforts have ensured that the Georgian language continues to function not only as a means of communication but as a carrier of cultural memory and creative potential.

In the field of the arts, the Academy has supported theoretical research, creative experimentation, and public engagement. Art historians and practicing artists affiliated with the Academy have explored both classical traditions and modern forms, fostering dialogue between heritage and innovation. Exhibitions, conferences, and interdisciplinary projects have expanded the visibility of Georgian art and strengthened its connection to international cultural processes.

Beyond individual disciplines, the Academy's most enduring contribution lies in its commitment to intellectual independence. By maintaining critical distance from ideological pressures and transient political agendas, The Academy of Humanities and Arts Sciences of Georgia has preserved a space for free scholarly inquiry and ethical reflection. This legacy continues to define the Academy's authority and relevance within Georgian society.

IV. INSTITUTIONAL DEVELOPMENT AND OVERCOMING CHALLENGES

The institutional development of The Academy of Humanities and Arts Sciences of Georgia has been shaped by both internal dedication and external challenges. Operating within a transforming social and political environment, the Academy has had to navigate limited financial resources, changing educational policies, and shifting cultural priorities. Despite these constraints, it has managed to sustain its organizational structure and academic activity through resilience and strategic adaptation.

Over the years, the Academy has gradually strengthened its internal governance, expanding membership through transparent selection processes and fostering collaboration among scholars and artists. Regular academic sessions, thematic conferences, and public discussions have contributed to institutional continuity and intellectual vitality. These activities have reinforced the Academy's role as a stable platform for scholarly exchange, even during periods of national uncertainty.

A critical aspect of institutional development has been the Academy's effort to establish partnerships with universities, cultural institutions, and civil society organizations. Such cooperation has allowed The Academy of Humanities and Arts Sciences of Georgia to extend its influence beyond its immediate membership and to participate in broader educational and cultural initiatives. Although international engagement has often been constrained by material limitations, the Academy has consistently expressed openness to cross-border dialogue and academic cooperation.

The Academy has also faced the challenge of maintaining relevance in a rapidly changing world, where technological innovation and globalized knowledge production reshape traditional academic models. In response, it has begun to explore digital formats for research dissemination, communication, and archival preservation. These initiatives reflect an understanding that institutional sustainability depends on the ability to integrate tradition with innovation.

Through perseverance and collective effort, The Academy of Humanities and Arts Sciences of Georgia has transformed challenges into opportunities for growth. Its institutional evolution demonstrates that academic integrity, when supported by shared values and long-term vision, can withstand external pressures and continue to serve the public good.

V. YOUTH POLICY AND ACADEMIC RENEWAL

The future of The Academy of Humanities and Arts Sciences of Georgia is inseparably linked to the active involvement, education, and empowerment of younger generations. Recognizing that intellectual continuity depends on renewal, the Academy has identified youth policy as one of its central strategic priorities in the contemporary period.

In recent years, the Academy has initiated open calls, competitive selection processes, and inclusive platforms designed to attract young scholars, researchers, and creative professionals. These initiatives are not symbolic gestures but deliberate efforts to create an environment in which emerging voices can develop independent thinking, engage in scholarly debate, and contribute meaningfully to national intellectual life. By integrating young members into its institutional structure, The Academy of Humanities and Arts Sciences of Georgia ensures the transmission of core values while allowing for innovation and critical reassessment.

Academic renewal is supported through a combination of educational and practical measures. Research grants, mentorship programs, artistic residencies, and thematic workshops provide young participants with opportunities to transform theoretical knowledge into practice. Particular attention is given to regional initiatives, enabling young intellectuals and artists outside the capital to participate in academic and cultural processes on an equal footing.

Digital transformation has also become an essential component of youth-oriented strategy. The development of online platforms for publication, discussion, and collaboration reflects the Academy's commitment to adapting to contemporary modes of knowledge production. These digital tools not only expand access but also strengthen the visibility of young scholars within both national and international contexts.

VI. CULTURAL DIPLOMACY AND INTERNATIONAL DIALOGUE

In an increasingly interconnected world, cultural diplomacy and international academic dialogue play a crucial role in shaping a nation's global presence. The Academy of Humanities and Arts Sciences of Georgia views engagement beyond national borders as a natural extension of its mission to promote humanitarian values and intellectual exchange.

The Academy's international orientation is grounded in the understanding that the humanities and the arts function as universal languages. By participating in cross-cultural dialogue, Georgian scholars and artists contribute to global debates while simultaneously presenting Georgia's historical experience, cultural heritage, and contemporary thought to the international community. Conferences, joint research projects, and artistic collaborations have served as key instruments in this process.

Despite material and logistical limitations, The Academy of Humanities and Arts Sciences of Georgia has consistently pursued partnerships with foreign academic institutions, cultural organizations, and independent intellectual networks. These relationships are based on mutual respect, scholarly integrity, and shared interest in humanitarian knowledge. Such cooperation strengthens the Academy's institutional credibility and opens new avenues for comparative research and creative exchange.

Cultural diplomacy is also expressed through the Academy's support for translation projects, international exhibitions, and the dissemination of scholarly publications abroad. By facilitating access to Georgian intellectual and artistic production, the Academy contributes to the diversification of global cultural discourse and counters marginalization within dominant academic narratives.

Through sustained commitment to international dialogue, The Academy of Humanities and Arts Sciences of Georgia affirms its role not only as a national institution but also as an active participant in the global intellectual community.

VII. THE ACADEMY IN CONTEMPORARY GEORGIA (2025)

As Georgia navigates the complexities of the 21st century, the role of The Academy of Humanities and Arts Sciences of Georgia remains both vital and dynamic. The contemporary political and cultural landscape presents challenges that underscore the Academy's mission: strengthening national self-awareness, protecting freedom of expression, and cultivating creative and critical thinking.

The Academy serves as an independent intellectual space, free from partisan influence, where scholarly discourse and artistic innovation can flourish. It continues to provide platforms for discussion, research, and performance, bridging the gap between traditional humanistic knowledge and contemporary societal needs. By fostering dialogue across disciplines and generations, The Academy of Humanities and Arts Sciences of Georgia ensures that the humanities and arts remain integral to the nation's development.

In 2025, the Academy emphasizes inclusivity and accessibility, ensuring that both established and emerging scholars, artists, and thinkers can participate in its activities. Regional programs, digital initiatives, and collaborative networks are designed to overcome geographical and social barriers, allowing the Academy to serve as a truly national institution.

VIII. FUTURE VISION AND STRATEGIC PRIORITIES

Looking forward, The Academy of Humanities and Arts Sciences of Georgia outlines strategic priorities to ensure continued relevance and impact:

Preservation of Independent Thought:

Maintaining an autonomous space for scholarship and artistic inquiry, independent of political or commercial pressures.

Promotion of Cultural Dialogue:

Strengthening both domestic and international cultural and humanitarian exchanges.

Support for Young Scholars and Creators:

Expanding mentorship, grants, residencies, and collaborative projects for emerging talent.

Institutional Strengthening:

Developing internal governance, expanding partnerships with national and international institutions, and investing in digital platforms for research and dissemination.

Public Engagement:

Enhancing public understanding of the humanities and arts, promoting national identity, and contributing to informed civic discourse.

IX. CONCLUSION

The thirty-one-year journey of The Academy of Humanities and Arts Sciences of Georgia represents a remarkable combination of perseverance, intellectual rigor, and cultural commitment. From its foundation in 1994 amid social and political upheaval to its present-day role as a hub of scholarship and creativity, the Academy has continuously demonstrated the power of humanistic knowledge and artistic expression in shaping society.

This anniversary is not merely a reflection on the past; it is an affirmation of ongoing responsibility and future potential. The Academy of Humanities and Arts Sciences of Georgia continues to illuminate the path for scholars, artists, and citizens alike, offering a space where ideas, creativity, and ethical reflection coexist in harmony. Thirty-one years is not the culmination but a milestone-a call to continue nurturing intellect, culture, and national consciousness for generations to come.

ORIGINAL ARTICLES AND SCIENTIFIC ACTIVITIES IN PEDIATRICS

FROM MOLECULES TO ENERGY: TOWARD BIOPHYSICAL MEDICINE

PAATA KERVALISHVILI

Georgian Academy of Natural Sciences

ABSTRACT

Background: The pharmaceutical paradigm, while transformative, faces significant limitations including drug resistance, systemic toxicity, and high costs. Biophysical medicine, which utilizes physical energy (e.g., electromagnetic fields, plasma, radiation) for therapeutic purposes, emerges as a complementary and potentially disruptive paradigm. A systematic comparison of these frameworks is needed.

Objective: This paper aims to develop and apply a comparative analysis framework to evaluate the pharmaceutical and biophysical paradigms across mechanistic, efficacy, safety, and economic dimensions.

Methods: A structured literature review and conceptual analysis were conducted. Key modalities of biophysical medicine—including nuclear medicine theranostics, magnetic resonance–guided focused ultrasound (MRgFUS), transcranial magnetic stimulation (TMS), and cold atmospheric plasma (CAP)—were systematically compared against standard pharmaceutical interventions. The analysis focused on target specificity, regenerative potential, temporal dynamics, and systemic impact.

Results: The analysis demonstrates that biophysical modalities offer superior spatial specificity and reduced systemic toxicity through localized energy delivery. They exhibit unique capacities for stimulating endogenous regenerative processes, a feature largely absent in pharmacology. Furthermore, biophysical interventions often allow for real-time feedback and adaptive control, enabling a higher degree of personalization. However, they face challenges in dosimetry standardization and require significant upfront technological investment.

Conclusion: The biophysical paradigm does not merely replace but fundamentally complements the pharmaceutical model. It represents a shift from chemical correction to physical modulation and bioenergetic restoration. A hybrid, synergistic approach, leveraging the strengths of both paradigms, is identified as the most promising trajectory for future medicine. This transition necessitates concurrent evolution in regulatory frameworks and medical education.

Keywords: *Biophysical Medicine; Pharmaceutical Paradigm; Comparative Analysis; Medical Physics; Precision Medicine; Theranostics; Cold Atmospheric Plasma; Neurostimulation.*

1. INTRODUCTION

The 20th century was defined by the triumph of pharmaceutical medicine. The discovery of molecules capable of selectively modifying biological pathways—from antibiotics to biologics—revolutionized healthcare. However, this model is increasingly strained by intrinsic limitations: the global crisis of antimicrobial and chemotherapeutic resistance, pervasive systemic toxicity, exorbitant development costs, and a reactive rather than regenerative approach to chronic diseases [1-4].

Concurrently, advances in medical physics have transitioned from providing primarily diagnostic tools to enabling novel therapeutic modalities. Techniques such as targeted radionuclide therapy, MRgFUS, and CAP therapy represent a new frontier—biophysical medicine—that employs controlled physical energy for intervention [5-9]. This

paradigm operates on the principle that biological systems are inherently physical, responsive to energy fields, and can be modulated to restore homeostasis without exclusive reliance on molecular agents.

While the promise of biophysical medicine is widely acknowledged, a systematic, head-to-head comparison with the established pharmaceutical paradigm is lacking. Most analyses remain siloed within specific disciplines. This paper seeks to fill this gap by proposing a structured comparative framework and applying it to evaluate the core characteristics, advantages, and limitations of each paradigm. Our central thesis is that biophysical medicine represents a complementary and necessary evolution, shifting the therapeutic logic from **chemical inhibition/stimulation to physical modulation and bioenergetic restoration.**

2. METHODS

To conduct a rigorous comparison, we developed a multidimensional analytical framework and applied it to a selection of key modalities.

2.1 Analytical Framework: The paradigms were evaluated across four primary dimensions:

Mechanistic Foundation: The fundamental principle of intervention (molecular binding vs. energy exchange).

Specificity and Systemic Impact: The ability to target diseased tissue while sparing healthy systems.

Temporal Dynamics and Reversibility: The timescale of action and the potential for non-destructive modulation.

Therapeutic Outcome and Regenerative Potential: The ca-

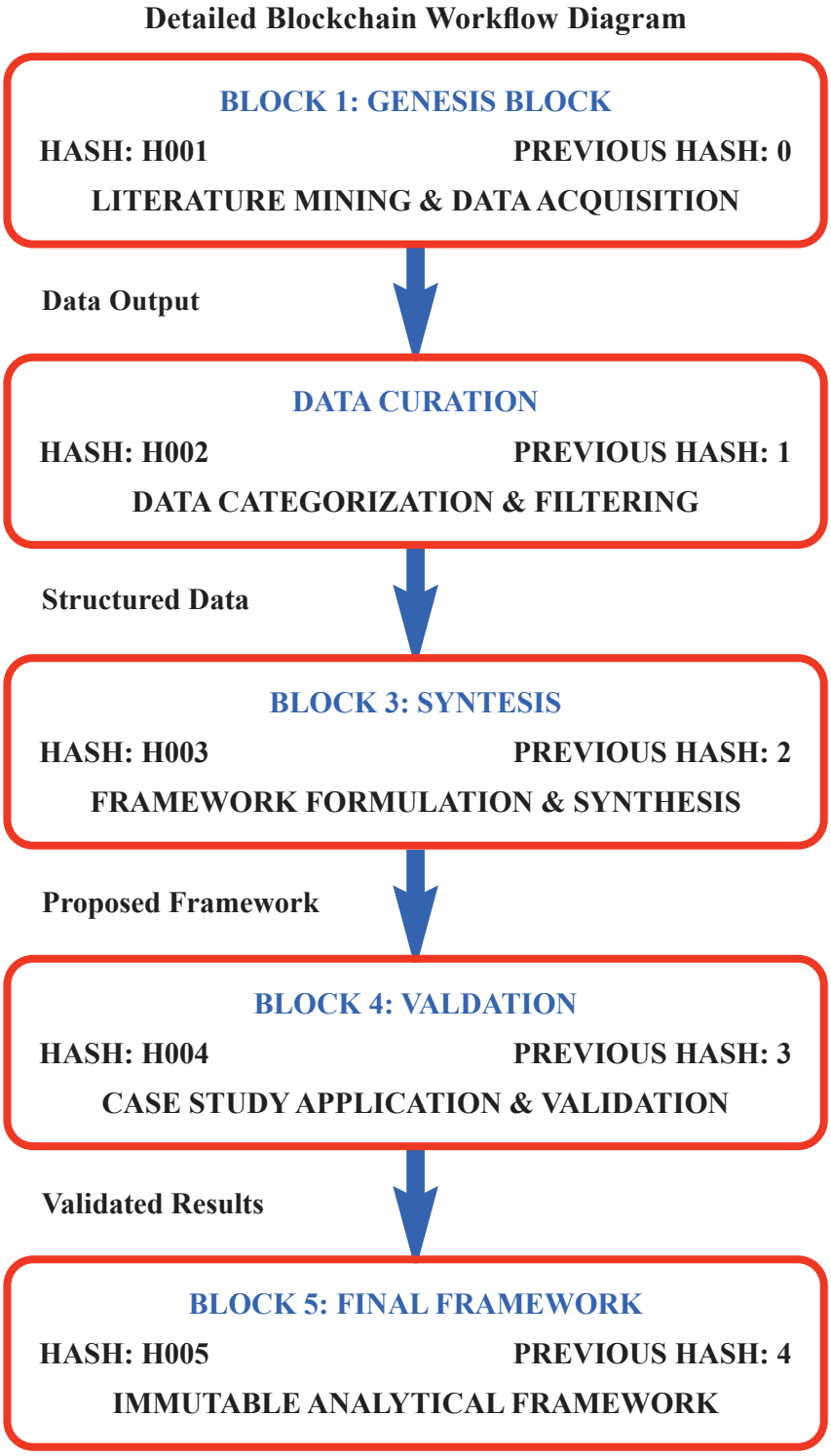

Figure 1: Detailed Blockchain Workflow Diagram. A blockchain-inspired schematic representing the structured, iterative, and verifiable process of the comparative analysis between pharmaceutical and biophysical paradigms. This diagram visualizes our analytical methodology as a chain of interconnected "blocks," where each block represents a phase of data processing, and the "hashes" ensure the integrity and logical connection between stages. The process begins with raw data input and culminates in the final, validated analytical framework.

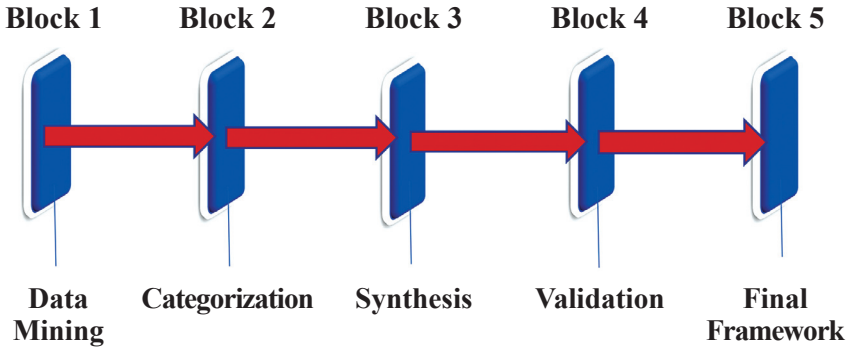

Figure 2: Simplified Visual Representation. A schematic of this iterative and verifiable methodology is presented for illustration of the process using a blockchain-inspired workflow to emphasize data integrity and logical progression.

pacity to manage symptoms versus promote structural repair.

2.2 Data Collection and Synthesis: A narrative but systematic literature review was performed using major scientific databases (PubMed, Google Scholar, Web of Science) for publications from 2010 to 2024. Search terms included "biophysical medicine," "plasma medicine," "theranostics," "pharmaceutical limitations," "drug resistance," combined with modality-specific terms. Foundational papers and high-impact clinical trials were prioritized. Data on efficacy, side effects, costs, and mechanisms of action were extracted and synthesized for a comparative analysis. Detailed visual representation of our research methodology and its workflow is given by the a blockchain-inspired figure 1; simplified visual representation – figure 2.

3. RESULTS: A COMPARATIVE ANALYSIS

The application of our framework yielded clear distinctions between the two paradigms, summarized in Table 1.

3.1 Illustrative Case Studies: Oncology: Chemotherapy vs. Cold Atmospheric Plasma (CAP): Chemotherapy acts systemically, damaging rapidly dividing cells indiscriminately, leading to severe side effects. In contrast, CAP generates reactive species that selectively induce apoptosis in cancer cells due to their distinct redox biology, preserving healthy tissue and demonstrating efficacy against multidrug-resistant strains [10].

Neuropsychiatry: SSRIs vs. Transcranial Magnetic Stimulation (TMS): Selective serotonin reuptake inhibitors (SSRIs) modulate neurotransmitter levels throughout the brain over weeks, causing various systemic side effects. TMS uses focused magnetic fields to non-invasively modulate activity in specific cortical circuits (e.g., the dorsolateral prefrontal cortex for depression), achieving comparable efficacy with a markedly different side-effect profile [11].

Tissue Repair: Growth Factors vs. Pulsed Electromagnetic Field (PEMF) Therapy: Topical growth factor applications are costly and can have variable efficacy. PEMF therapy applies specific electromagnetic fields to promote bone and soft-tissue regeneration by enhancing en-

Table 1.

Comparative Analysis of Pharmaceutical vs. Biophysical Paradigms

Dimension	Pharmaceutical Paradigm	Biophysical Paradigm
Mechanistic Foundation	Chemical binding to receptors/enzymes	Energy transfer (EM fields, radiation, plasma)
Target Specificity	Biochemical affinity; often systemic diffusion	Spatial focusing via imaging/field guidance
Systemic Toxicity	High (off-target binding)	Low (localized energy deposition)
Temporal Dynamics	Slow, requires sustained concentration	Instantaneous/short-term; often tunable
Regenerative Potential	Low (primarily symptomatic)	High (stimulates repair mechanisms)
Development Cost	Very High (~$2B/drug) [2]	High initial R&D, lower marginal cost
Personalization	Limited (weight-/age-based dosing)	High (real-time feedback and dosimetry)

dogenous calcium signaling, nitric oxide production, and angiogenesis, demonstrating a cost-effective, non-invasive regenerative strategy [12].

4. DISCUSSION

Our analysis confirms that the biophysical paradigm offers distinct advantages in specificity, personalization, and regenerative capacity. Its foundational principle—**control through energy**—allows for interventions that are spatially confined and adaptable in real-time, aligning perfectly with the goals of precision medicine.

However, this shift is not without challenges. The "dose" in biophysical medicine is a complex function of energy, time, and tissue properties, requiring sophisticated modeling and monitoring-a stark contrast to the mg/mL standardization of drugs. This necessitates the development of new regulatory science focused on energy dosimetry and device-biocompatibility. Furthermore, the high initial cost of biophysical technologies and the need for specialized training risk creating a new form of healthcare inequity.

The most promising path forward is not a replacement but a **synergistic integration.** The emerging field of hybrid theranostics exemplifies this: a radiopharmaceutical is used both to image (diagnose) and to deliver targeted radiation (therapy). Similarly, plasma-activated liquids can sensitize tumors to conventional chemotherapy, and ultrasound can transiently open the blood-brain barrier for targeted drug delivery. These approaches leverage the molecular specificity of pharmacology and the spatial precision of physics.

5. CONCLUSION

This comparative analysis demonstrates that biophysical medicine represents a profound and necessary evolution in therapeutic strategy. It addresses critical limitations of the pharmaceutical model, particularly concerning toxicity, resistance, and the lack of regenerative impetus. The paradigm shift is from seeing the body as a set of molecular locks requiring chemical keys, to viewing it as a dynamic, energy-information system that can be tuned and reset.

The future of medicine lies in a unified framework that intelligently combines the best of both worlds: the systemic reach and molecular precision of drugs with the localized, regenerative, and personalized potential of biophysical modalities. Realizing this future will require concerted efforts in interdisciplinary education, the development of new regulatory pathways, and a commitment to ensuring equitable global access to these transformative technologies.

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KALEIDOSCOPE OF INTERESTING WORKS

INNOVATIONS IN GERIATRIC HIP FRACTURE MANAGEMENT IN CHINA: A SYSTEMATIC REVIEW OF RECENT ADVANCES

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ABSTRACT

Background: With the intensification of population aging, hip fracture has emerged as a major public health concern jeopardizing the well-being of the elderly population. However, conventional diagnostic and therapeutic paradigms exhibit significant limitations, including disparities in medical resource allocation and inadequate postoperative rehabilitation infrastructure. **This systematic review aims to** synthesize innovative practices and evidence-based findings within China's hip fracture management landscape over the past five years, with a focus on treatment modalities, surgical advancements, and rehabilitation strategies.

Methods: We conducted comprehensive searches across databases including CNKI, Wanfang Medical Network, Springer, and PubMed for clinical studies, technical reports, and epidemiological surveys published between 2020 and 2025. Twenty-one representative articles encompassing key themes such as Multidisciplinary Team collaboration, robotic-assisted surgery, novel biomaterials, and community-based rehabilitation were selected for critical analysis.

Results: Current research demonstrates that novel diagnostic and therapeutic approaches have yielded substantial breakthroughs in managing geriatric hip fracture patients. The implementation of green channels integrated with the Multidisciplinary Team model has optimized perioperative management, reduced hospital stays, and lowered complication rates. The introduction of robotic-assisted platforms and three-dimensional printing technology has significantly decreased operative duration while enhancing diagnostic and therapeutic precision. Furthermore, the adoption of Enhanced Recovery After Surgery protocols and the development of regional medical networks are progressively enhancing functional recovery outcomes.

Conclusion: Hip fracture management in China is advancing toward precision medicine and standardized care. Future endeavors should prioritize strengthening tiered healthcare delivery systems and establishing integrated lifecycle management models, ultimately aiming to improve patient quality of life and mitigate the societal burden associated with this condition.

Keywords: *Geriatric Hip fracture; Multidisciplinary Team collaboration; Robotic-assisted surgery; Enhanced recovery after surgery; Precision medicine; Community-based rehabilitation.*

INTRODUCTION

Hip fracture (HF), often termed the “terminal fracture of life,” poses a significant threat to the elderly population, with reported 30-day postoperative mortality rates reaching 6%-12% (1, 2). The Guidelines for treatment and management of hip

fractures in the elderly (2022 version) indicate that while age-standardized HF incidence rates have exhibited a declining trend in recent years, the absolute number of cases continues to escalate due to population aging. Consequently, HF remains a leading cause of disability and mortality among older adults (1). This condition predominantly affects elderly patients with multiple comorbidities (including dementia, heart failure, and chronic kidney disease), osteoporosis, and hypoalbuminemia-factors that exponentially amplify surgical risks (2). Conventional HF management models are further challenged by protracted treatment pathways, frequent surgical delays, suboptimal perioperative care, and inadequate postoperative rehabilitation outcomes (3).

In response, China has progressively addressed these limitations through the integration of multidisciplinary teams (MDT), intelligent surgical platforms, and community-based rehabilitation networks. This review systematically synthesizes key technological advances and model innovations in HF management, analyzes barriers to clinical translation, and establishes a theoretical foundation for developing personalized HF management systems aligned with China's healthcare landscape.

METHODS

Comprehensive literature searches were executed across PubMed, CNKI, and Wanfang databases to identify relevant Chinese- and English-language publications spanning 2020-2025. Search strategies incorporated the following key terms: hip fracture, multidisciplinary collaboration, robotic-assisted surgery, and postoperative rehabilitation. Eligible studies focused on Chinese hip fracture populations (encompassing femoral neck fractures, intertrochanteric fractures, periprosthetic fractures, and related subtypes) were screened and selected. The final analysis included randomized controlled trials (RCTs), cohort studies, technical notes, and consensus guidelines, while excluding secondary publications (e.g., reviews, commentaries), animal studies, and reports with incomplete datasets.

DEVELOPMENT OF MDT MODELS AND OPTIMIZATION OF TREATMENT PATHWAYS

Traditional fragmented care pathways frequently delay surgical interventions, consequently elevating complication risks and prolonging hospitalization (4). This necessitates the implementation of integrated care models. The Guidelines for treatment and management of hip fractures in the elderly (2022 version) advocate establishing emergency green channels and standardized assessment protocols to expedite evaluation and hospitalization (1). Parallel recommendations from the Guidelines for management of geriatric femoral intertrochanteric fractures endorse early surgery (≤48 hours) within MDT frameworks (5). In 2022, Fan et al. retrospectively evaluated the MDT co-management model in Chinese geriatric intertrochanteric fracture patients (6). The study compared an MDT cohort (n=241; 2017–2019) from Peking University Third Hospital against a traditional orthopedic care (TOC) cohort (n=249; 2014–2016). The MDT protocol-led by orthopedic surgeons with integrated geriatricians, anesthesiologists, intensivists, and physiotherapists-provided coordinated care from admission through discharge. Results showed that the MDT group had significantly shorter time from admission to surgery (1.7±1.3 days vs. 2.4±1.5 days, $P<0.001$) and a higher rate of surgery within 48 hours (80.9% vs. 63.5%, $P<0.001$) compared to the traditional group. Additionally, the length of hospital stay was significantly reduced (4.0±2.5 days vs. 5.0±2.8 days, $P<0.001$), and the overall postoperative complication rate was markedly lower (25.3% vs. 44.2%, $P<0.001$). Notably, while this model significantly improved perioperative metrics, no significant differences were observed in in-hospital mortality (0.4% vs. 0.8%, $P=0.582$) or 30-day mortality (1.7% vs. 2.4%, $P=0.557$).This suggests MDT models primarily mitigate complications associated with surgical delays, whereas long-term survival benefits require validation through larger-scale studies. Corroborating evidence from Yang Minghui's team at Beijing Jishuitan Hospital confirmed MDT implementation significantly increased 48-hour surgery rates ($P<0.001$), reduced hospital stays, and lowered in-hospital and 1-year mortality risks (7). Discrepancies in mortality outcomes across aforesaid studies may reflect variations in baseline characteristics (e.g., age, comorbidity burden), sample sizes, and follow-up durations.

Aligned with national initiatives, Gansu Provincial Third People's Hospital established a standardized MDT platform incorporating green channel protocols (8). Their comparative study demonstrated significant reductions in preoperative waiting time, length of stay, and incidences of pressure ulcers and pulmonary infections in the MDT cohort versus conventional care. To recapitulate, the integrated green channel-MDT model optimizes surgical timeliness, shortens hospitalizations, and enhances resource utilization. By comprehensively managing comorbidities (e.g., coronary artery disease, stroke history), MDT frameworks mitigate perioperative risks and reduce complication-related mortality (6-8). Nevertheless, current evidence predominantly originates from observational cohorts and small-scale investigations. Future research should prioritize rigorously designed multicenter randomized controlled trials to establish universal applicability.

INNOVATIONS IN SURGICAL TECHNIQUES AND ADVANCES IN PRECISION MEDICINE

Recent advancements in Proximal Femoral Bionic Nail (PFBN) systems have substantially improved outcomes for unstable intertrochanteric femoral fractures (IFF). Based on the triangular support theory, this dual-triangle biomechanical construct optimally redistributes proximal femoral stress (9). Clinical data demonstrate operative durations ranging from 83.1±12.2 minutes (AO/OTA Type A2) to 105.0±12.9 minutes (Type A3) (P=0.02), with 1-year Harris Hip Scores averaging 82.6±4.6. Crucially, 87.5% of patients achieved unassisted ambulation without implant cut-out or screw breakage, confirming superior biomechanical stability versus conventional Proximal Femoral Nail Antirotation (PFNA) devices (10). Concomitantly engineered 3D-printed patient-specific titanium alloy prosthetic composites (e.g., titanium mesh-prosthesis hybrid constructs) achieve precise morphological conformity with proximal femoral anatomy. The micro-architected porous topology (mean pore diameter 600μm, porosity 70%) substantially augments osseointegrative efficacy while exhibiting markedly reduced complication rates relative to conventional allograft-prosthetic composites (P<0.05) (11). Collectively, synergistic material innovations and structural refinements afforded by 3D printing technology substantially enhance procedural precision and osseointegration kinetics in complex revision total hip arthroplasty, thereby facilitating paradigm-shifting advancements in patient-tailored reconstruction for critical bone defects and osteoporotic conditions. Notwithstanding, the longitudinal biomechanical stability of these innovative composite systems necessitate rigorous validation via multi-center cohort investigations.

Robotic integration has revolutionized post-fracture reconstruction precision. Beijing Jishuitan Hospital pioneered the Mako robotic-assisted "ring-point-column" acetabular reconstruction technique (12), developing four high-fidelity intraoperative registration methods demonstrating 98.5% success rate and 0.38 mm mean spatial accuracy. Robotic-assisted reaming facilitated precision prosthesis placement, yielding median angular deviations of merely 1.0° in inclination and 0.0° in anteversion relative to preoperative planning, with concomitant successful reconstruction of the hip rotation center (COR). Longitudinal radiographic surveillance revealed no evidence of implant failure, establishing this modality as a sophisticated therapeutic approach for complex acetabular revision surgery. Chen et al. further demonstrated Tianji Robotic System integration with anatomical Union Plate technology (13), enabling minimally invasive placement of posterior column and infra-acetabular screws via 3D planning and real-time guidance. Versus conventional freehand techniques, the robotic cohort achieved superior perfect screw placement (Lonstein grade 0: 96% vs. 75%, P=0.024), significantly reduced intraoperative fluoroscopy (17.1±4.9 vs. 45.4±4.9 exposures, P<0.001), shorter screw placement time (19.9±3.2 vs. 42.5±6.7 minutes, P<0.001), also decreased operative duration and blood loss (P<0.05). Robotic surgery coupled with advanced implants optimizes precision and safety in complex HF management, propelling the field toward personalized minimally invasive solutions. Although these benefits, substantial costs remain a barrier to widespread adoption in resource-limited settings.

STANDARDIZATION AND PERSONALIZATION OF POSTOPERATIVE REHABILITATION SYSTEMS

Contemporary clinical guidelines uniformly emphasize that

early postoperative rehabilitation is paramount for functional restoration in geriatric HF patients. Healthcare institutions should establish MDT to initiate preoperative conditioning based on physiological reserve, subsequently tailoring postoperative protocols according to surgical approach, pain dynamics, fall risk stratification, and muscular recovery trajectories. Rehabilitation should commence with muscle strengthening exercises-optimally initiated on postoperative day 1-progressing to long-term balance training and fall prevention programs to enhance ambulatory capacity and restore functional independence (1, 5, 14). Crucially, weight-bearing can be safely initiated immediately following internal fixation without elevating implant failure risk, while concurrently reducing hospitalization duration and mortality (15). These accelerated rehabilitation paradigms are underpinned by Enhanced Recovery After Surgery (ERAS) principles, which provide evidence-based frameworks directly influencing recovery kinetics and prognostic outcomes (14). A recent retrospective cohort study including 203 geriatric HF patients demonstrated that the ERAS group had significantly lower postoperative VAS scores than the conventional group (3.68±1.12 vs 4.26±1.58, P=0.003). Follow-up results indicated that the ERAS group exhibited significantly higher Barthel Index scores compared to the conventional group (80.27±12.31 vs 75.05±15.27, P=0.008) (16). These findings substantiate that standardized ERAS protocols-integrating multidisciplinary collaboration, minimally invasive techniques, comprehensive analgesia, and early mobilization-effectively mitigate postoperative pain and accelerate functional restitution.

Despite escalating geriatric HF incidence amid accelerated population aging, conventional models exhibit critical deficiencies in post-discharge rehabilitation continuity-a pivotal determinant of surgical outcomes. Consequently, a tripartite hospital-community-home rehabilitation continuum has emerged, consolidating resources for sustainable long-term management (17). Zhang et al. validated this model through an RCT (18): the intervention group (n=30) receiving phased video feedback rehabilitation guidance showed significantly higher Harris (89.7) and Barthel (89.7) scores at 3-month follow-up versus control ($P<0.05$). Community physician hubs further demonstrated economic viability, maintaining mean daily costs below RMB25.3 through coordinated care-substantially below conventional rehabilitation expenses. The Expert consensus on perioperative nursing of geriatric hip fractures (2023) advocates equipping community centers with remote monitoring systems to optimize outcomes (14). Such technology enables real-time biometric tracking, facilitating remote progress assessment and dynamic protocol adjustments. Current operational frameworks necessitate MDT leadership from tertiary institutions, resulting in disproportionately low coverage in primary care settings. Future system refinements should prioritize resource reallocation and capacity building to address this disparity.

PREVENTION AND PUBLIC HEALTH STRATEGIES

Geriatric HF, representing one of the most severe osteoporotic fracture phenotypes, poses substantial public health challenges due to high mortality rates, significant disability burdens, and elevated secondary fracture risk (86% higher than initial fractures). The Experts consensus on intergrated management of geriatric hip fracture and prevention of secondary fracture designates first-time HF patients as the highest-risk cohort for subsequent fractures. Falls constitute the predominant etiological mechanism, with prior fall victims exhibiting 2-3-fold higher recurrence risk versus non-fallers. Consequently, systematic fall risk screening should commence at the earliest clinically appropriate juncture, supplemented by periodic reassessments. Implementation of nurse-led Fracture Liaison Services (FLS) coordinating multidisciplinary interventions-including osteoporosis pharmacotherapy, personalized exercise protocols, and environmental modifications-demonstrably reduces fall-related refracture incidence (17). Future initiatives warrant development of artificial intelligence (AI)-enhanced risk stratification systems to streamline assessments, augment community-based primary prevention capabilities, and explore innovative FLS reimbursement models.

The predictive utility of muscle density metrics for secondary fractures provides novel pathophysiological rationale for prioritizing sarcopenia screening. Wang et

al.'s prospective cohort study utilizing quantitative CT analysis established gluteus medius/minimus density as an independent predictor of secondary HF (HR=1.68, 95% CI: 1.20–2.35; P<0.01), outperforming femoral neck BMD (P>0.05). This implicates compromised skeletal muscle integrity as a critical mechanism underlying recurrent fractures (19). According to the Global Leadership Initiative on Sarcopenia (GLIS), sarcopenia constitutes a progressive disorder characterized by diminished skeletal muscle mass and function (20). Recently, epidemiological surveillance indicates global sarcopenia prevalence ranges from 10%–27% among older adults, with China demonstrating substantially higher rates (20.7%) versus Japan (9.9%). Analysis of 7,775 participants (≥45 years) in the China Health and Retirement Longitudinal Study (CHARLS) cohort confirmed 33% elevation in hip fracture risk among sarcopenic individuals (OR=1.33). During 9-year follow-up, fracture incidence was significantly higher in sarcopenic versus non-sarcopenic groups (7.17% vs. 3.75%; P<0.001) (21). However, diagnostic heterogeneity persists across existing sarcopenia criteria (20). Future frameworks should integrate quantitative muscle density assessment into FLS risk stratification protocols, combined with resistance training and nutritional optimization to establish comprehensive bone-muscle preventive paradigms targeting secondary fracture reduction.

SUMMARY

Through continuous innovation and exploration, novel diagnostic and therapeutic approaches have achieved significant breakthroughs in preoperative assessment, perioperative management, surgical precision, and postoperative rehabilitation for geriatric HF patients. Current evidence demonstrates that the integration of expedited pathways with MDT models substantially reduces preoperative waiting times, shortens hospital stays, and lowers complication and mortality rates, yielding superior clinical outcomes for high-risk populations (6-8). Furthermore, surgical innovations including the PFBN system have eliminated implant cut-out and screw failure; 3D-printed patient-specific implants enhance osseointegration efficiency; while robotic-assisted arthroplasty confines acetabular reconstruction errors to ≤1° with near-zero dislocation rates, advancing HF management toward personalized and minimally invasive paradigms (10-13). ERAS-guided early weight-bearing combined with tripartite "hospital-community-home" rehabilitation significantly improves functional independence (1, 14, 16-18). Finally, sarcopenia has been established as an independent predictor of secondary fractures, advocating for skeletal muscle mass screening as a cornerstone of primary prevention and implementation of integrated "bone-muscle" preventive strategies (19-21). Collectively, these findings provide an evidence-based framework for optimizing geriatric HF care systems with profound clinical, policy, and public health implications.

Despite these advances, current research exhibits limitations: ① Most MDT investigations employ single-center designs with limited sample sizes, constraining generalizability; ② Emerging technologies (e.g., PFBN, robotic surgery) lack longitudinal efficacy data; ③ Heterogeneous sarcopenia diagnostic criteria predispose to diagnostic inaccuracies, impeding standardized management. This review thus delineates a paradigm shift from fragmented intervention toward comprehensive precision management in geriatric HF care, providing foundational scientific support for developing efficient and equitable prevention-treatment systems.

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RASA THERAPY (RASAT) – "THE KEY TO DEFEATING CANCER MUST BE SOUGHT WITHIN THE PATIENT'S IMMUNE SYSTEM"

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ABSTRACT

"RASA", or Repressed Auto-Sero-Adjuvant Therapy ("RASAT"), which may also be referred to with the same meaning as "SASA" therapy (Suppressed Auto-Sero-Adjuvant Therapy – "SASAT"), represents an immunostimulatory, general health-promoting, and adjunctive method to conventional therapeutic modalities. The approach involves the subcutaneous administration of repressed/suppressed (inactivated, attenuated) components derived from the patient's own venous blood serum, for therapeutic purposes.

"RASA" therapy may represent a "new milestone" in oncology. It must be emphasized that "the key to defeating cancer must be sought within the patient's immune system." As is well known, tumor cells are antigenically distinct from their corresponding normal cells. Consequently, through immune surveillance, tumor cells elicit an "immune response directed against tumor-associated antigens," in which lymphocytes play a central role. Within the framework of "RASA" therapy, by repressing (suppressing) autologous serum, the pathogenic cell is essentially weakened or "unmasked," thereby becoming more recognizable to immune cells. This facilitates the detection and eradication of pathogenic (antigenic, atypical, or metastatic) cells circulating via lymphatic and hematogenous pathways. Based on these considerations, one of the potential indications for "RASA" therapy may be the treatment or prevention of tumor metastasis.

For the implementation of these theses and methods, it will be essential in the future to actively pursue scientific, experimental, and laboratory research. To this end, we are ready to collaborate with all interested institutions and companies in any country.

INTRODUCTION

According to the latest medical data, the use of autohemotherapy, autoserotherapy, autoplasmotherapy, oral autohemotherapy, and other similar methods is associated with minimal adverse effects. Their application provides long-lasting therapeutic outcomes, with stabilization of the patient's condition and recovery achieved within a relatively short period, both in adults and children. In the context of an increased viral burden and an environment contaminated with pathogenic microorganisms, the human immune system becomes weakened; therefore, treatment with the above-mentioned methods acquires particular clinical relevance.

The thesis and methodology of the "RASA" therapy I propose are based on the achievements of modern medical science, encompassing the anatomical, immunological, morphological, clinical, and biological aspects of the human body. The fundamental matrix of these aspects includes: the cell; the cell cycle; apoptosis; bacteria; bacteriophages; viruses; the immune system; lymph and the lymphatic system; blood and the circulatory system; tumors and the cell cycle; metastasis and metastatic processes; serotherapy; immunotherapy; targeted therapy; and other related domains.

"RASA," or Repressed Auto-Sero-Adjuvant Therapy ("RASAT"), which may also be referred to with the same meaning as "SASA" therapy (Suppressed Auto-Sero-Adjuvant Therapy – "SASAT"), represents an immunostimulatory, general health-promoting, and adjunctive method

to conventional therapeutic modalities. The approach involves the subcutaneous administration of repressed/suppressed (inactivated, attenuated) components derived from the patient's own venous blood serum, for therapeutic purposes.

Autologous serum (autosera) is a biological product prepared from the patient's own blood, processed under sterile conditions using specialized methods, and stored for personalized use. It is administered subcutaneously according to an individualized protocol for each patient. Autologous serum contains a broad spectrum of cytokines (including interleukins, prostaglandins, serotonin, and others).

Autosera exert anti-inflammatory, antiviral, and antimicrobial effects and stimulate the immune system. Due to its unique composition and properties, autologous serum is successfully applied as part of complex therapy across multiple fields of medicine, including allergology, immunology, pediatrics, gynecology, dermatology, and urology.

In healthy individuals, the immune system continuously detects and eliminates pathogens as well as mutated cells. However, for a variety of reasons, this natural surveillance system may sometimes be disrupted, leading to the development of specific diseases

The essence of "RASA" therapy is to strengthen and enhance the immune system. It is based on the use of the patient's autologous serum (treatment with the patient's own blood serum, plasma, or exudate). This approach enables to achieve remission or significant reduction of the symptoms, decreases the need for pharmacological interventions, and improves the patient's quality of life within a relatively short period.

"RASA" therapy may represent a "new milestone" in oncology. It must be emphasized that "the key to defeating cancer must be sought within the patient's immune system." As is well known, tumor cells are antigenically distinct from their corresponding normal cells. Consequently, through immune surveillance, tumor cells elicit an "immune response directed against tumor-associated antigens," in which lymphocytes play a central role. Within the framework of "RASA" therapy, by repressing (suppressing) autologous serum, the pathogenic cell is essentially weakened or "unmasked," thereby becoming more recognizable to immune cells. This facilitates the detection and eradication of pathogenic (antigenic, atypical, or metastatic) cells circulating via lymphatic and hematogenous pathways (including in the common lymphatic and venous collector, the v. cava superior). Based on these considerations, one of the potential indications for "RASA" therapy may be the treatment or prevention of tumor metastasis.

Repressed Auto-Sero-Adjuvant Therapy (RASAT) is applicable in both inpatient and outpatient settings. A detailed description of the method, including its mechanism of action, implementation procedures, indications, contraindications, and potential adverse effects, is comprehensively presented in my authored monograph: "RASA Therapy (RASAT): Morphological, Clinical, and Anatomical Aspects." Further information on this subject will be provided in subsequent publications.

In parallel with "RASA" therapy, I have also proposed several other novel (alternative) theses and methods, including: "RALA" therapy (Repressed Auto-Lympho-Adjuvant Therapy – RALAT), "RACA" therapy (Repressed Auto-Cyto-Adjuvant Therapy – RACAT), and "PRASA" therapy (Peroral Repressed Auto-Sero-Adjuvant Therapy – PRASAT).

I hope that the presented works will become an interesting contribution to the scientific community. At the same time, constructive criticism is welcome, since medical science is a living organism-a dynamic waterfall, which, without critique, becomes a stagnant pool.

For the implementation of these theses and methods, it will be essential in the future to actively pursue scientific, experimental, and laboratory research. To this end, we are ready to collaborate with all interested institutions and companies in any country.

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THE EFFECTIVENESS OF PSYCHOTHERAPY TREATMENT FOR SOMATOFORM DISORDERS IN CHILDREN AND ADOLESCENTS: AN ARTICLE

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Somatoform disorders, characterized by physical symptoms without a clear medical explanation, can significantly impact the well being and functioning of children and adolescents. In recent years, there has been an increasing prevalence of these disorders in young populations, underscoring the need for effective treatment approaches. (Heimann et al., 2018) Psychotherapy has emerged as a promising intervention, with various modalities demonstrating promising outcomes.(Cruz et al., 2014)

One such approach is the use of therapeutic fact sheets within a family-based rehabilitation intervention (Cruz et al., 2014). These fact sheets provide information about functional somatic symptoms, their assessment, and treatment, from a stress-system framework. The goal is to facilitate family engagement and reduce parental anxiety and reactivity, which can contribute to the maintenance of symptoms. This multimodal intervention has shown positive results, with improvements in symptom reduction and overall functioning.

In addition to family-based approaches, individual psychotherapy has also demonstrated efficacy in treating somatoform disorders in children and adolescents. Cognitive-behavioural therapy (CBT), in particular, has been found to be effective in addressing the underlying cognitive and behavioural factors that contribute to the development and perpetuation of somatic symptoms. Exposure-based techniques, which gradually confront the child or adolescent with feared physical sensations or situations, have also been shown to reduce symptom severity.

FOR THE TREATMENT EFFECTIVENESS

Psychoeducation is crucially important to provide for children, adolescents and their parents. Psychoeducation is a professionally delivered treatment modality that involves psychotherapeutic and educational interventions (Lukens & McFarlane, 2004). Cognitive behavioral therapy along with a

psychoeducation is an optimal approach to deal with somatoform disorders (Khundadze 2015).

This article will review the current evidence on the effectiveness of psychotherapy treatments for somatoform disorders in children and adolescents. Specifically, we will examine the efficacy of various psychotherapeutic modalities, including cognitive-behavioral therapy (CBT), family therapy, and psychodynamic therapy, in reducing physical symptoms and improving overall functioning in this population. Additionally, we will explore factors that may impact the success of psychotherapy, such as treatment setting, therapist characteristics, and client demographics (Dorsey, S. et al., 2019).Accumulated research suggests that psychotherapy, particularly cognitive-behavioral approaches, can be an effective intervention for alleviating physical symptoms and enhancing overall functioning in children and adolescents with somatoform disorders (Dorsey, S. et al., 2019) (Chorpita, F, B. et al., 2011). However, challenges remain in translating these evidence-based practices into real-world school and community settings.(Thompson, A., 2011) (Hunter, C, W., Elswick, S. and Casey, L., 2017) Ongoing research is needed to further refine and disseminate psychotherapeutic approaches that address the unique needs of youth struggling with somatoform disorders.

The research based on systematic review of literature reached from Medline, PsychInfo, GoogleScholar, Cochrance databases. This work includes review papers and original articles on the somatoform disorders psychotherapy treatment effectiveness.

The aim of the study is to test the hypothesis whether psychotherapy treatment along with psychoeducation is the most effective approach to treat somatoform disorders.

The study was based on a review of sixty relevant articles.

Challenges related to childhood psychopathology are especially long lasting, including the advancement in comorbidity, disability, suicidality, and lower educational and vocational achievement (Costello & Maughan, 2015 Roest et al 2023). Although successful treatments exist for the management of emotional or behavioral disorders in young people, still little is known about their outcomes in the long run. Most randomized controlled trials on the effectiveness of dealings for frequent childhood mental conditions have only concentrated on outcomes after several weeks to several months of treatment (Roest et al 2023). Several findings, however, have indicated that children and adolescents who received treatment can better handle challenges in life than those with similar problems who stayed untreated. Studies especially focusing on psychopharmacology have also indicated possible long-term side effects (Jeorg et al., 2012. Carucci et al., 2021). Several research studies stipulate that the benefits of pharmacological treatments decrease over time and that long-term effects are small, if present at all. Additionally, benefits are even smaller in mild to moderate compared to acute cases (Kazda et al., 2021). For instance, Pharmacological intervention for ADHD has moderate side effects in the short-term, such as decrease of appetite and sleep disturbing, and is associated with high withdrawal rates, that is, 2044% (Kazda et al., 2021).

As well, managements of attention deficit and hyperactivity disorder (ADHD) involve pharmacological and psychosocial involvements. (Roest et al 2023). Nonpharmacological approaches for ADHD include psychosocial interventions of either the child and/or the parents or in some cases academic involvements in school settings. The research conducted on the success of these types of interventions in the long term is few and therefore the evidence is lacking (Charach et al., 2011 Roest et al 2023).

The study by Roest et al 2023 focused on measuring whether the management of common childhood mental disorders is successful and harmless in the long term, two years and above. The study evaluates the accessible evidence for the long-term effectiveness and safety of treatments for the most frequently occurring childhood mental disorders. For research purposes the study followed two approaches: (1) methodological difficulties in establishing long-term treatment effects and (2) the risk–benefit ratio of treatments for common childhood mental disorders. The study performed systematic reviews on the long-term, two years and more, success and damages of treatment for attention deficit hyperactivity disorder (ADHD), behavior, anxiety, and depressive disorders for children between 6 and 12 years old. The study, however, could not find any evidence for the long-term treatment of childhood anxiety or depressive disorders (Roest et al 2023). As well, evidence for adverse effects for phar-

macological intervention in the long-term is limited, as there are not enough studies and therefore proper comparison groups (Carucci et al. 2021). Although, certain studies suggest that stimulant medications cause both height and weight suppression (Kazda et al. 2021). However, the lack of evidence for clear long-term benefits, the damages of pharmacological treatment may overshadow the benefits, especially in the long term and severe cases (Kazda et al., 2021). A research study conducted by Pillay et al. (2018) investigated the harms of first and second-generation antipsychotics in the treatment of psychiatric and behavioral conditions in children, teenagers, and young adults. Antipsychotics prescribed for behavior disorders are linked to side effects such as extrapyramidal symptoms (particularly with first-generation antipsychotics), weight gain, sleepiness, sedation, and high triglyceride levels. Again, there are few studies with a long-term follow-up. However, second-generation antipsychotics have been found to also raise the risk for weight gain, high cholesterol, and type-2 diabetes in the long term (Pillay et al., 2018). Therefore, clinicians should try to avoid antipsychotics, especially in mild and moderate cases and search for alternatives such as psychotherapy. Among psychosocial treatments, parent-level and multicomponent programs showed positive long-term effects (Epstein et al., 2015).

For instance, among recommended treatment approaches for body dysmorphic disorder (BDD) is cognitive behavioral therapy without selective serotonin reuptake inhibitors. Body dysmorphic disorder (BDD) usually emerges during teenage years, impacts almost 2% of adolescents (Krebs, Clark, Ford, & Stringaris, in press; Veale, Gledhill, Christodoulou, & Hodsoll, 2016; Krebs et al., 2022; Krebs, Clark, et al., in press; Rautio et al., 2022). Despite its frequency and morbidity, BDD is often non recognized and left untreated in Child and Adolescent Mental Health Services across the world (Dyl, Kittler, Phillips, & Hunt, 2006; Grant, Kim, & Crow, 2001; Krebs, Rifkin-Zybutz, Clark, & Jassi, 2023). The study aims to provide a synthesis of the recent literature on BDD in young people, that is, relevant to clinical practitioners and policymakers.

The characteristics of BDD are the following: The patients with body dysmorphic disorder express an extreme preoccupation with perceived flaws in physical appearance that appear minor or are completely unobservable to others. Appearance worries in BDD can relate to any body part, but facial features are the most common focus and mostly young people have many appearance worries (American Psychiatric Association, 2013; Rautio, Jassi, et al., 2022). In a struggle to deal with appearance distresses, young people with BDD usually engage in time-consuming, repetitive behaviors, often involving checking, concealing or correcting their supposed flaws. They may also become extremely avoidant, for example, of social meetings or places with bright lighting (Krebs et al., 2022). For an identification of BDD, the appearance obsession and repetitive behaviors must be distressing and impairing (American Psychiatric Association, 2013). Multiple studies suggest that non-shared environmental experiences play a crucial role in the progress of BDD. Acknowledging these environmental factors is key to managing the BDD (Ahmadpanah et al., 2019; Alsaidan et al., 2020; Gupta, Jassi, & Krebs, 2023; Ryding & Kuss, 2020). Even when young people with BDD do present to mental health services, they usually refer to other symptoms rather than their look worries, which may result in misdiagnosis (depression, social anxiety disorder) and finding proper treatment (Krebs, Rifkin-Zybutz, et al., 2023).

Additionally, clinician should evaluate for specific family aspects that may prolong a young person's BDD. Parents often get drawn into BDD-related forms of behavior: for example, enabling avoidance, keeping unnecessary reassurance about appearance and supplying large quantities of cosmetic stuff. This process is often referred to as family adaptation (Jassi, Baloch, Thomas-Smith, & Lewis, 2020).

A meta-analysis six of which were conducted with adults and one with adolescents indicate CBT to be the most effective in treating BDD and anxiety management (Cohen's d = À 1.22) (Harrison et al., 2016).

As well, CBT is effective in treating any form of depression and BDD related depression(Harrison et al., 2016).

In a study 30 adolescents with BDD were randomly assigned to receive 14 sessions of CBT for BDD followed by psychoeducation and weekly monitoring. CBT sessions remarkably reduced BDD (Cohen's d = 1.13). Furthermore, CBT causes secondary outcomes

improvements, including anxiety, depression, and general quality of life. The reached effect was maintained at 12-month follow-up. Though, the findings emphasize that some young people with BDD may need more widespread treatment packages, which could include a longer course of CBT, home-based CBT sessions, and medication optimization (Krebs et al., 2024).

Lately, the largest study has examined results related with multimodal treatment among children and teenagers reaching BDD services in London and Stockholm as part of clinical care (Rautio, Gumpert, et al., 2022). In this study, 140 patients aged 10–18 received CBT for BDD (mean number of sessions = 17.2, range 2–80) and the majority (72%). The patients also received medication, mainly selective serotonin reuptake inhibitors (SSRIs). Treatment resulted in significant reductions in BDD symptoms, with 79% of participants. Improvement in depressive symptoms and psychosocial functioning were indicated too. This lasted over the 12-month follow-up period. Analyses of unmedicated patients showed very similar results, signifying that CBT alone may be an effective treatment for adolescent BDD (Krebs et al. 2024).

Engaging young people with BDD in treatment can be challenging, particularly when insight is poor. It is important that therapists refrain from polarising physical and psychological explanations and instead explain that the goal of treatment is to reduce distress, improve quality of life and build self-confidence. Motivational interviewing techniques are often used at the start of therapy (and potentially throughout therapy) to increase engagement. CBT for BDD in young people includes three main stages: psychoeducation and formulation (typically sessions 1–3), contact with response prevention and/or behavioural experiments (typically from Session 4 onwards), and relapse prevention (the last two sessions). A typical course of CBT for adolescent BDD contains 12–22 sessions, usually taking place on a weekly basis (Greenberg et al., 2016; Mataix-Cols et al., 2015; Rautio, Jassi, et al., 2022). Although there are no empirical standards for defining the optimal numbers of sessions (Krebs et al. 2024). Parental involvement in CBT for BDD in young people is beneficial, mostly during the psychoeducation part to ensure a shared understanding of BDD (Greenberg et al., 2016; Mataix-Cols et al., 2015).

The level of parental participation in psych education thereafter depends on different factors, including: the developmental level of the young person; their ability to practice CBT techniques independently in between sessions; and the level to which parents are involved in BDD-related rituals, such as offering reassurance, which may involuntarily fuel BDD (Jassi et al., 2020).

The other research involving systematic review and meta-analysis of 276 mental health studies offering psychoeducative interventions concluded that psychoeducation is the most effective therapy approach. Psychoeducation improves general cognitive skills and mental health knowledge among young people (Salazar de Pablo et al., 2020). The study by Boustani et al. 2020 additionally stresses that psychoeducation has recently been identified as the most effective mental health programs for children. Also, psychoeducation has been suggested for use in group therapy settings (Baourda et al., 2022). Psychoeducative approach has shown to be significantly effective to various mental health problems in adolescents, such as depression, stress related problems and anxiety (Dolan et al., 2021).

Psychoeducation is for individual psychotherapies, and for groups. Offering it needs certain amounts of formal training and is consequently a reasonable and achievable part for many therapeutic practices. The strong evidence on the usefulness and general effectiveness of psychoeducation, in combination with study findings, imply that this component should be focused for inclusion and further investigation in future involvements for service-involved youth (Kvamme et al. 2024). The study by Kvamme et al. 2024 aims to identify treatment programs for adolescents with mental disorders across residential settings. The results illustrate emotion recognition and differentiation, and Psych education should be prioritized in novel interventions targeting adolescent behavior in residential settings (Kvamme et al. 2024). Several findings indicate that across residential settings, adolescents express high rates of similar and co-occurring disorders in residential group care foster care, mental health care (), and forensic youth care (Deas, 2006; Vaughn et al., 2008; Jozefiak et al., 2016; Beaudry et al., 2021).

According to research analysis involving models from 19 nations, the occurrence of psychotic disorders, major depression, post traumatic stress disorder (PTSD), and ADHD are more than double among adolescents in forensic institutions, compared to their no - detained peers, and they are more likely to have a conduct disorder (Beaudry et al., 2021). The world health organization (WHO) has called the potential of successful health interventions for adolescence as it can significantly benefit the young person's health and wellbeing, creating a better basis for their adult life, which in turn will resemble on their future children (World Health Organization, 2022)

One of the problematic forms of somatoform disorder is eating disorder: accompanied by excess eating and regurgitating, so called bulimia or refusing to eat, named anorexia. Psychoeducation has a vital role in controlling and treatment of eating disorders. Eating disorders in childhood and adolescence harmfully impact numerous parts of development and functioning of children, adolescents, and their families (Mesaric 2024). The empirical studies of psychoeducation for patients with eating disorders or their caregivers aimed to find out the effectiveness of psychoeducation approach for patients with eating disorder. The results suggest that psychoeducation is a powerful management approach for children, adolescents and caregivers in the treatment of eating disorders. It may lead to weight gain, a reduction in eating disorder symptoms, and a decrease in caregiver problems (Mesaric 2024). Other findings stress as well that psychoeducation for children, adolescents, and parents is essential in the management of eating disorders. (National Institute for Health and Care Excellence, 2020; Nicholls & Yi, 2012; Rosello et al., 2021; Spettigue et al., 2015). Apart from psychoeducation the eating disorder treatment guidelines recommend family based treatment and cognitive behavioural therapy as confirmed, evidence - based, and successful approaches for the treatment of children and adolescents (National Institute for Health and Care Excellence, 2020). A study focused on a systematic literature review using multiple databases - PsycInfo, PubMed, and Web of Science (Mesaric 2024). Eating disorders are interrelated to a variety of psychiatric comorbidities, mostly depression and anxiety, which both have a high lifelong frequency, accompanied by obsessive - compulsive disorder, post - traumatic stress disorder, personality disorders, developmental disorders, for example, autism, and substance use disorders (Campbell & Peebles, 2014; Carpita et al., 2022; Hudson et al., 2007). Eating disorders referrals to mental health services, increased since the beginning of the COVID - 19 pandemic, with both, the number of urgent and routine referrals of children and adolescents that led to increased patient waiting times (Otto et al., 2021; Solmi et al., 2021). Suicidal thoughts and attempts were more frequent among adolescents who were diagnosed with an eating disorder during the pandemic (Taquet et al., 2022). Overall, there was an escalation in both first ever admissions and re -referrals of patients with a previously definite eating disorder, who experienced an increase of symptoms (Linardon et al., 2022), which was especially prevailing amongst female teenagers with anorexia nervosa (Taquet et al., 2022). Cognitive behavioral therapy is an effective way for treatment of depressive and anxiety disorder (Khundadze 2015).

The next approach treating mental disorders in children and adolescents are computer games based on cognitive behavioral therapy. Also, learning new abilities in the context of standard therapies such CBT or cognitive remediation can be a prolonged and fastidious process in this population (20), especially in children and adolescents with attention deficit disorders. By combining within a video game evidence-based therapy techniques with learning theories, serious games can make this learning process less unpleasant and more amusing for patients (Zayeni 2020). In a research twenty-two studies, aiming on a wide range of psychiatric conditions. The results indicate that the most effective treatment approach is cognitive behavioral therapy based therapeutic games, less effective than commercial games (Zayeni 2020). The study concluded therapeutic games and to a certain extent widely available commercial video games can be an effective approach for psychotherapy in children and adolescents mental health management.

The other pressing problem in children adolescents' mental health that requires psychoeducation and psychotherapeutic intervention is Internet gambling.

Internet gambling is an urge to gamble continuously despite negative consequences or a desire

to stop. The problem with Internet gambling is often defined by harm experienced by the gambler or others, rather than by gambler's behavior. If the gambler meets certain criteria, the severe dependence on Internet gambling is diagnosed as clinical pathological gambling and needs effective treatment approaches. The study assessed 50 children and adolescents expressing pathological Internet gambling. Among them several patients showed psychomotor delay as a result of pathological gambling. The study excluded all patients with mental retardation and language impairment. Treatment of Internet gambling is mainly psychological. Treatment is based on family therapy and psychoeducation, social skills training and addiction counseling.

Further, Shojeyan et al. 2024 conducted the study on the usefulness of various psychological treatment methods for adolescent Internet addiction compared Mindfulness-Based Cognitive-Behavioral Therapy and Emotion-Focused Therapy on sensation seeking among adolescents with Internet addiction. The study involved adolescents aged 11 to 18 with Internet addiction attending the Behi Clinic in District 7 and the Wish for Liberation Clinic in District 3 of Tehran. In the study 45 voluntary adolescents. None of the patients had a history of psychiatric disorders. For the assessment, Young's Internet Addiction Test. Based on the findings of the current study, there was no significant difference between the Mindfulness-Based Cognitive-Behavioral Therapy (MBCBT) and Emotion-Focused Treatments (EFT) in adolescents with Internet addiction. Both approaches were equally effective (Shojeyan et al. 2024).

The Mindfulness-Based Cognitive-Behavioral Therapy (MBCBT) program involves eight 90-minute sessions designed for adolescents with Internet dependence. This interference focuses to increase self-regulation and decrease impulsivity through mindfulness practices combined with cognitive-behavioral strategies. Participants are educated to observe their thoughts and feelings without judgment and learn to disrupt the automatic processes that lead to excessive internet use (Rezaei et al., 2022; Segal et al., 2018). Whereas, Emotion-Focused Treatments(EFT) is the change and regulation of emotions, which leads to an effective reduction in sensation seeking.

The therapy focuses to teach adolescents to recognize their emotions and experience their emotions leading to improvement of problematic interaction patterns. In the treatment process, the therapist creates a logical and appropriate condition for working with emotions (Ghaffari et al., 2022).

Both those treatments; CBT and EFT focused on social connections and interpersonal relationships created in these sessions, and help patients

to overcome the belief of worthlessness, nobody accepts me in the real world. Therefore, the increased isolation pattern and withdrawal seen in adolescents with Internet dependence (Yang et al., 2023). Remarkably in recent years, Internet dependence has become one of the major social harms (Lin, 2020), with statistics demonstrating that adolescents and young adults are most helpless to Internet-related problems (Rezaei et al., 2022). The severity and statistics of Internet dependence rose considerably among adolescents since the beginning of the COVID-19 pandemic due to quarantine lockdown followed by school closure (Lin, 2020). The pathological Internet dependence negatively influences the psychological, social, and emotional processes of adolescents (Karaer and Akdemir, 2019). Various studies indicate that pathological Internet dependence causes decreased self-esteem, exaggerated feelings of loneliness and anxiety, depersonalization, and emotional regulation problems (Tras, 2019).

To sum up, the findings undeniably indicate that psychotherapy is the most effective approach to treat various forms of somatoform disorders in children and adolescents. Especially cognitive behavioral therapy and psychoeducation has shown to be the most effective to target the problems caused from somatoform disorders. Psychoeducation is as crucial as therapy itself as it increases literacy of children, adolescents, and their family members and allows them to approach the problem with more awareness (Lukens and McFarlane, 2004; Salazar de Pablo et al., 2020). As well, CBT shows the same effect as the pharmaco treatment is more effective on a long term and has no side effects (Krebs et al. 2024) as pharmacotherapy has many side effects (Pillay et al., 2018)

The aim of the next study is to understand in more depth how psychotherapy, namely cognitive behavioral therapy and psychoeducation work on a long term. Whether the treatment resulted in total elimination of the disorder or prolonged remission period.

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DIFFERENT

RESEARCH STATUS AND COUNTERMEASURES FOR ALLERGIC DISEASES IN CHINESE CHILDREN

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ABSTRACT

In recent years, the prevalence rate of allergic diseases in Chinese children has shown a rapid upward trend, and these diseases have become major chronic conditions affecting children's health. Epidemiological surveys indicate that the current prevalence rate of allergies among infants aged 0–24 months in China reaches 12.3%, and over 40% of parents of children have reported a history of allergic symptoms in their children. The prevalence rate of allergic rhinitis in children aged 3–12 years is 17.8%, the prevalence rate of atopic dermatitis increased from 3.07% in 2002 to 12.94% in 2015, and the prevalence rate of childhood asthma has tripled over 20 years. Allergic diseases exhibit a typical "allergic march" with age: in infancy, they mainly present as eczema and food allergies, and gradually progress to allergic rhinitis and asthma as children grow older.

Keywords: *Childhood allergy; current status research; specific immunotherapy.*

INTRODUCTION

Allergic diseases, also known as hypersensitivity diseases, refer to a large category of diseases in which the body produces abnormal immune responses to common environmental factors. These diseases recur repeatedly and cause health damage, including allergic rhinitis, atopic dermatitis, allergic asthma, and some food allergies [1]. In some individuals, exposure to allergens can trigger a potentially life-threatening systemic allergic reaction within seconds or minutes, which is referred to as anaphylaxis [2].From a global epidemiological perspective, allergic diseases affect an enormous population: Statistics show that the global number of asthma patients stands at 300 million; food allergies impact a broad range of people, with approximately 200 million to 250 million individuals affected by them; in terms of drug allergies, 1 in 10 individuals has a drug allergy; additionally, the global number of allergic rhinitis patients amounts to as many as 400 million [3]. In China, this issue is equally severe and has become a major public health problem that urgently needs to be addressed. Based on clinical practice and scientific research, this article aims to analyze the epidemiological characteristics and clinical features of childhood allergic diseases in China, explore effective prevention and treatment strategies, and provide references for improving children's allergic health status.

EPIDEMIOLOGICAL CHARACTERISTICS OF ALLERGIC DISEASES IN CHINESE CHILDREN

In recent years, the prevalence rate of allergic diseases in Chinese children has shown a rapid upward trend. A survey conducted by the National Center for Women and Children's Health, Chinese Center for Disease Control and Prevention (CDC), targeting urban infants aged 0–24 months showed that over 40% of parents reported that their children had experienced or were experiencing allergic symptoms, with a current symptom prevalence rate of 12.3%. Among these symptoms, single symptoms of rash and pruritus accounted for the highest proportion, followed by ocular-nasal and gastrointestinal symptoms. The peak

of disease occurrence is concentrated in the 4–6-month-old group, after which it decreases significantly; additionally, male infants have a higher risk of developing the disease than female infants, and only about 20% of affected children have ever sought medical treatment for a confirmed diagnosis [4]. This data indicates that the prevalence level of infant allergic diseases in China has gradually approached that of developed countries. This not only highlights the urgency of implementing primary prevention for infant allergic diseases but also provides an important practical basis for this study to focus on the analysis of relevant prevention strategies or mechanisms.

Common allergens in children include Candida species, inhalant allergens and foodborne allergens. Inhalant allergic diseases are more common in school-age and preschool children, while foodborne allergic diseases predominate in infants and toddlers. An analysis of 804 children with allergic diseases showed that [5], The diseases were dominated by allergic rhinitis, cough variant asthma, and eczema, with a total allergen positive rate of 80.8%. Statistically significant differences in the positive rates of inhalant and foodborne allergens were observed among children of different age groups, and significant gender differences were also noted: the purely inhalant allergen positive rate was higher in males than in females, while the purely foodborne allergen positive rate was higher in females than in males. Among inhalant allergens, the top 5 were Candida species, Artemisia, cat dander, dust mites, and Humulus scandens; among foodborne allergens, the top 3 were egg white, cow's milk, and peach species. Artemisia pollenosis had a high incidence in school-age children, with the peak of clinical symptom onset concentrated in July to September.

CLINICAL MANIFESTATIONS AND DIAGNOSIS

The clinical manifestations of childhood allergic diseases are complex and diverse, which can involve multiple organ systems [6]. Respiratory symptoms include chronic cough, recurrent nasal congestion, and rhinorrhea; cutaneous manifestations are mainly rash and pruritus, urticaria, and atopic dermatitis; gastrointestinal symptoms commonly include abdominal pain, diarrhea, and hematochezia; ocular symptoms present as conjunctival hyperemia, lacrimation, and ocular pruritus; systemic manifestations include classic features of allergic rhinitis such as allergic shiners and frequent nose rubbing. In addition, allergic symptoms vary among children of different age groups: infants and young children may present only with nasal congestion, mouth breathing, snoring, feeding difficulties, or nose/eye rubbing; preschool children mainly have nasal congestion, which may be accompanied by ocular symptoms or cough; school-age children primarily present with watery rhinorrhea, which may be accompanied by ocular symptoms or epistaxis.

The commonly used diagnostic methods in China include allergen testing and clinical assessment [7]. Allergen testing mainly includes skin prick test (SPT) and serum specific IgE test [8]. However, it should be noted that a positive test result only indicates a sensitization status and does not necessarily mean the presence of clinical manifestations of allergy. Clinical diagnosis requires integration of the assessment of symptoms and signs, food diary documentation, and, when necessary, provocation test (the gold standard for diagnosis). Among specific recommendations: allergen testing is not recommended for children with food allergy suspected to be non-IgE-mediated based solely on rectocolitis symptoms; routine screening is not recommended for asymptomatic children who only have siblings or parents with a food allergy history; routine allergen testing is not recommended for children with eczema, but testing is recommended for children with persistent moderate-to-severe eczema and poor response to conventional treatment; allergen testing is recommended for children with chronic cough clinically suspected to be associated with allergy.

PREVENTION STRATEGIES FOR ALLERGIC DISEASES

The prevention of allergic diseases is divided into three levels: primary prevention (aimed at preventing sensitization), secondary prevention (aimed at preventing symptom development in sensitized individuals), and tertiary prevention (aimed at preventing worsening of symptoms or development of complications in affected individuals). Adopting appropriate prevention strategies can significantly reduce the risk of occurrence and the severity of progression of allergic diseases.

PRIMARY PREVENTION STRATEGIES

Primary Prevention aims to prevent the occurrence of allergen sensitization and mainly targets high-risk children. Studies have shown that [9], In the early stage of infant development, the introduction of diverse food proteins through diet can exert a significant impact on the diversity level of intestinal flora and the structural characteristics of its community composition, and is an effective strategy for preventing future food

allergic reactions. Prescot et al. [10] that the introduction of solid foods between 4 and 6 months after an infant's birth has a certain protective effect in reducing the risk of food allergies. This stage is regarded as the critical window period for the body to establish immune tolerance in early life; during this period, regular intake of protein-containing foods helps induce the immune system to develop tolerance to food proteins. Conversely, if solid foods are introduced beyond this time frame, the probability of infants developing food allergies may increase.

Furthermore, relevant data indicate that [11] there is a significant correlation between vitamin D deficiency and airway hyperresponsiveness in children. Carrying out screening and prevention efforts for vitamin D deficiency may play a positive role in the management of airway hyperresponsiveness. Intestinal dysbiosis in children is closely associated with the occurrence of allergic diseases, and microecological preparations can effectively prevent these diseases. As confirmed by relevant studies [12] The occurrence of allergic diseases in children is associated with intestinal dysbiosis, and the more severe the dysbiosis, the stronger the correlation. Follow-up data show that the incidence of allergic diseases in neonates without allergic diseases who used microecological preparations was significantly lower than that in those who did not use them at 6 months and 12 months of age. At the same time, environmental and physiological factors are also crucial: paternal smoking and alcohol consumption before conception can increase the risk of allergic rhinitis in children, and this risk depends on the exposure dose and duration [13]. During pregnancy and after birth, outdoor environmental factors (including gaseous chemicals, pollen, and weather conditions) as well as indoor factors (such as dust mites, secondhand smoke, decoration pollution, and food particles carried by pet fur) are all associated with childhood allergies. In contrast, breastfeeding and the intake of specific components like Omega-3 polyunsaturated fatty acids can provide protective effects for children.In the future, in-depth research is needed on areas such as the mechanisms connecting emerging pollutants to allergies. For prevention, it is essential to strengthen air quality control and reduce harmful exposures to pregnant women and infants; additionally, avoiding tobacco exposure can lower the risk of childhood allergies in children [14].

SECONDARY AND TERTIARY PREVENTION STRATEGIES

For children who have been sensitized or already present with allergic symptoms, the focus of prevention shifts to reducing symptom exacerbations and preventing disease progression. Secondary prevention targets children with a family history of allergies or allergic predisposition, and strengthens allergen screening through methods such as umbilical cord blood IgE testing, serum testing, and skin prick tests. Tertiary prevention is applied to children with positive allergen test results: it controls allergens through low-cost strategies, and also requires the implementation of PDCA cycle-based education. This includes popularizing allergy-related knowledge, providing guidance on allergen avoidance and medication use, and improving treatment adherence among children and their parents [15].

TREATMENT METHODS FOR ALLERGIC DISEASES

AVOID EXPOSURE TO ALLERGENS

The treatment of allergic diseases in children should adopt comprehensive and individualized strategies, including various measures such as allergen avoidance, pharmacological treatment, immunotherapy, and patient education. Treatment plans should be tailored based on factors like the type of allergy, severity, age, and preferences. Avoiding exposure to known allergens is the most fundamental and effective treatment strategy. For example [16]. For the prevention of childhood asthma, a key aspect is avoiding exposure to environmental allergens such as dust mites, mold, and pollen. Additionally, indoor allergy prevention should be addressed through multiple approaches: for dust mite control, this includes regularly washing bed linens and curtains, using mite-proof bedding, and maintaining indoor humidity below 50%; for pollen, it involves keeping doors and windows tightly closed during pollen seasons to minimize children's outdoor activities, and having them wear masks if they do need to go outside; for pet management, it means keeping pets away from children and bathing them regularly; and for food allergen avoidance, it requires identifying the foods children are allergic to and avoiding their consumption.

PHARMACOLOGICAL TREATMENT

In the intervention of allergies, pharmacological treatment mainly serves to relieve allergic symptoms and regulate the progression of inflammation. Common medications each have distinct applicable

scenarios: Antihistamines can block histamine receptors to alleviate discomforts such as itching, sneezing, and runny nose, and are suitable for conditions like allergic rhinitis and urticaria. For instance, cetirizine has been proven to effectively prevent idiopathic allergic reactions [17, 18]; Nasal corticosteroids, as the first-line treatment for allergic rhinitis, can effectively relieve nasal inflammation and related symptoms [19]; Bronchodilators and inhaled corticosteroids, for patients with asthma, respectively serve to relieve bronchospasm and regulate airway inflammation [16]; Epinephrine can be used to manage severe allergic reactions and is the first-line drug for addressing anaphylactic shock both at home and abroad [20, 21].

IMMUNOTHERAPY

Immunotherapy (desensitization therapy) is the only treatment method that may alter the natural course of allergic diseases. By regularly administering gradually increasing doses of allergen extracts, it allows the immune system to gradually develop tolerance, thereby alleviating symptoms and reducing the need for medication [22]. Immunotherapy can be used for allergic rhinitis, asthma, and insect venom allergy, with two primary approaches: subcutaneous immunotherapy and sublingual immunotherapy. Studies have shown that omalizumab, an anti-IgE monoclonal antibody drug, has demonstrated good efficacy in reducing the progression of allergic diseases [23]. Dupilumab can significantly improve the signs and cutaneous lesion symptoms of patients with moderate-to-severe atopic dermatitis, relieve pruritus, enhance quality of life, and has a good safety profile [24]. Furthermore, suplatast tosilate is currently widely used in the treatment of allergic inflammatory diseases such as asthma and atopic dermatitis. It has good efficacy and high safety, and has become a focus of attention in the research field of treating Th2 cell-mediated diseases [25].

LONG-TERM MANAGEMENT

Allergic diseases are chronic conditions that require long-term management. Improving the quality of life of affected children is one of the key goals of treatment. Comprehensive management strategies include: conducting patient education to enhance disease awareness and self-management skills among parents and children; providing psychological support to help children cope with disease-related psychological and social challenges; promoting school involvement and the development of allergy response plans to ensure campus safety; and implementing regular follow-ups to assess the condition, adjust treatment plans, and monitor children's growth and development, among other measures.

FUTURE RESEARCH DIRECTIONS

Research on allergic diseases is still developing rapidly, and future studies in this field will focus on precision medicine, novel immunotherapies, microbiome regulation, and environmental intervention: The first relies on biomarkers to distinguish disease subtypes and develop personalized treatment plans; the second involves in-depth analysis of the mechanisms of immunotherapies and the development of safer and more effective therapies to help patients establish allergen tolerance; in terms of microbiome regulation, efforts will be made to modulate the microbiota through probiotics, prebiotics, or bacterial lysates to achieve disease prevention; for environmental intervention, the mechanisms by which factors such as air pollution and climate change affect allergies will be explored to provide support for public health policies, thereby reducing the risk of allergies.

CONCLUSION

Childhood allergic diseases have become a major public health issue affecting children's health, with their incidence rate on the rise globally. These diseases not only impact children's physical health but may also affect their psychological development, learning abilities, and quality of life. The management of childhood allergic diseases should adopt a comprehensive strategy, including prevention, treatment, and long-term management. In terms of prevention, the early introduction of potentially allergenic foods may help reduce the risk of food allergies; in terms of treatment, the principle of individualization should be followed, combining multiple approaches such as allergen avoidance, pharmacological treatment, and immunotherapy; in terms of long-term management, emphasis should be placed on improving quality of life and preventing complications. Of particular note, the "allergic march" highlights the trend of allergic manifestations changing with age; therefore, long-term follow-up of children with allergies is necessary to adjust prevention and treatment strategies in a timely manner. For children with allergies receiving targeted therapy, vaccination requires special caution and should follow the recommendations of professional guidelines. With the development of scientific research,

our understanding of the mechanisms underlying allergic diseases continues to deepen, and prevention and treatment methods are also constantly advancing. Through scientific and effective comprehensive management, most children with allergies can achieve good disease control and enjoy a healthy and happy life.

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OBSERVATION ON THE EFFICACY OF NASAL ALLERGEN BARRIER AGENT IN THE TREATMENT OF ALLERGIC RHINITIS

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ABSTRACT

Objective: To study the clinical effect of nasal spray allergen barrier agent in children with allergic rhinitis. Methods: Children aged 6-11 years who visited the pediatric outpatient department of Yulin Hospital of Traditional Chinese Medicine in July each year from July 2021 to July 2023 and met the diagnostic criteria for allergic rhinitis were collected. With the consent of their families, 184 children were randomly divided into two groups. The observation group (87 cases) was treated with nasal spray nasal allergen barrier agent; the control group (97 cases) was given oral desloratadine granules 2.5mg once a day. The observation group was additionally treated with nasal spray nasal allergen barrier agent on the basis of the control group, 1 spray per nostril, 4 times a day. The course of treatment lasted for 8 weeks. According to the Visual Analogue Scale (VAS), the changes in the average total scores of sneezing, runny nose and nasal congestion before and after treatment were observed. Results: Before treatment, there was no statistical significance in the average VAS scores of the above three symptoms between the two groups. After 8 weeks of treatment, the total effective rate was 94.3% in the observation group and 80.4% in the control group ($p<0.05$); during the treatment period, the average total score of the observation group was significantly lower than that of the control group ($p<0.05$). Conclusion: The efficacy of nasal spray nasal allergen barrier agent combined with oral desloratadine granules in children with allergic rhinitis is better than that of oral desloratadine granules alone, which provides a reference for further clinical research on organic solute nasal mucosa isolation therapy.

Keywords: *Allergic rhinitis; Barrier agent; Nasal mucosa isolation.*

Allergic rhinitis is a common disease in pediatrics. Currently, with the advancement of industrialization and the rapid development of cities, its incidence has shown a significant upward trend. At present, 20% of the world's population suffers from allergic diseases, and their prevalence continues to increase [1]. Allergic rhinitis is divided into perennial and seasonal types. Among them, the seasonal type affects the widest population and seriously impacts normal life. This seasonal rhinitis is mostly caused by pollen allergy, also known as pollinosis.

The pathogenesis of seasonal allergic rhinitis is that after inhaling pollen microparticles in the air, they are adsorbed on the surface of the nasal mucosa, stimulating the body to produce and release immunoglobulin E (IgE). After IgE is formed, it is adsorbed on basophils and mast cells in the superficial layer and on the surface of the nasal mucosa, making the body in a sensitized state. When the body comes into contact with the same sensitizing substance again, the substance can combine with IgE to activate enzyme components in basophils, releasing transmitters such as histamine and slow-reacting substances [2]. Blocking allergens from entering the nasal cavity is the best anti-allergic method. The traditional method is local and/or systemic anti-allergic treatment. This method adds a nasal allergen barrier agent to the traditional treatment. It is evenly sprayed into the middle and inferior nasal meatus, forming an isolation layer on the surface of the mucosa, which electrostatically adsorbs allergen particles, thereby reducing the absorption of allergens by the nasal mucosa.

1. MATERIALS AND METHODS

The study subjects were 184 children aged 6-11 years who met the diagnostic criteria for allergic rhinitis and visited our department in July 2021 (from July 1 to July 31), and in the same period of 2022 and 2023 (a total of 3 months over 3 years). They had a disease duration of more than 1 year and were clearly diagnosed with seasonal allergic rhinitis. The diagnostic criteria were formulated based on the children's family history, typical allergic history, clinical manifestations, and consistent laboratory test results.

(1) Symptoms: 2 or more of the following symptoms: sneezing, clear nasal discharge, nasal itching, and nasal congestion. The daily symptoms persist or accumulate for more than 1 hour, and may be accompanied by respiratory symptoms (such as cough, wheezing) and ocular symptoms (including eye itching, tearing, red eyes, burning sensation, etc.) and other accompanying disease symptoms.

(2) Signs: Common signs include pale and edematous nasal mucosa, and watery nasal secretions.

(3) Laboratory tests: Allergen testing shows that at least one allergen has a positive skin prick test (SPT) and/or positive serum-specific IgE; nasal secretion testing shows that the proportion of eosinophils under a high-power microscope is > 0.05 (positive) [3].

The 2008 ARIA guidelines propose that mild allergic rhinitis (AR) refers to mild symptoms that have no significant impact on the child's life (including sleep, study, and daily activities); moderate-severe AR refers to symptoms that are troublesome and have an adverse impact on one or more aspects of the child's sleep, study, or daily activities [4]. This study targeted children with moderate-severe AR who started treatment after confirmation. According to the 2020 Japanese AR guidelines [5], it is recommended to evaluate the efficacy of persistent or perennial AR 2-4 weeks after the initial treatment. If symptoms improve, continue consolidation treatment for 4 weeks. Based on these guidelines, our treatment course was designed to be 8 weeks, which is more conducive to observing clinical efficacy.

The subjects were randomly divided into two groups. The control group was given oral desloratadine granules (Hainan Pulisheng Pharmaceutical Co., Ltd.) 2.5 mg once a day. The observation group was given oral desloratadine granules 2.5 mg once a day, and at the same time used nasal spray-type nasal allergen barrier agent Aqi (produced by Wuhan Dazheng Gaoke Biomedical Co., Ltd.), 1 spray per nostril, 4 times a day. The total treatment course was 8 weeks. A total of 184 children completed the 8-week treatment, including 87 in the experimental group and 97 in the control group. There was no statistical significance in the gender ratio.

According to the 2020 American Rhinitis Guidelines [6], which recommend the first evaluation 5-7 days after the initial treatment, we started scoring 1 week after standardized treatment. The evaluation method adopted the Visual Analogue Scale (VAS) for subjective evaluation. Visual scales were distributed to the children's families, including three items: sneezing, runny nose, and nasal congestion. Each symptom was scored from 0 to 10 points from mild to severe. Evaluation started from the second week after treatment. The weekly scoring method was: parents recorded the scores of the above three symptoms once a day, calculated the daily average score of the three symptoms, and calculated the average score of the week at the end of the week. (Marked improvement: ≤1 point; Improvement: 1-6 points; No improvement: ≥6 points). The evaluation lasted for 7 weeks.

STATISTICAL METHODS

SPSS 22.0 statistical software was used for data analysis. Measurement data were expressed as mean ± standard deviation (`x±s), and comparison of means between groups was performed using independent-samples t-test. Count data were expressed as rates and analyzed using the chi-square (x^2) test. A P-value < 0.05 was considered statistically significant.

RESULTS

All subjects were randomly divided into two treatment groups, with each treatment lasting 8 weeks. The families of all included children were given a Visual Analogue Scale assessment form, requiring a fixed family member to conduct the assessment once a day. We conducted telephone follow-ups once a week for 8 weeks. The results showed that in the control group, 44.3% of children had significantly relieved allergic rhinitis symptoms, 36.1% had improved symptoms, and 19.6% had no improvement. In the experimental group, 55.2% of children had significantly relieved symptoms, 39.1% had improved symptoms, and 5.7% had no improve-

Table 1.

shows that after 8 weeks of treatment, the total effective rate in the observation group was significantly higher than that in the control group, with a statistically significant difference (P < 0.05).

Group	Marked improvement	Improvement	No improvement	Total effective rate
Control group (n=97)	43(44.3)	35(36.1)	19(19.6)	78(80.4)
Observation group (n=87)	48(55.2)	34(39.1)	5(5.7)	82(94.3)
x2				7.936
P				0.019

ment. The difference between the experimental group and the control group was statistically significant (P < 0.01). The adjuvant treatment with the barrier agent showed obvious clinical efficacy in allergic rhinitis. Statistical analysis indicated that applying pollen barrier agent in the nasal cavity on the basis of conventional anti-allergic treatment significantly reduced nasal absorption of pollen, leading to marked alleviation of rhinitis symptoms, which is worthy of widespread clinical promotion.

DISCUSSION

Currently, allergic rhinitis shows a significant increasing trend and has become a global disease with a rapidly rising incidence. Scholars from Italy and other countries reported that a survey covering four continents (Asia, Europe, America, and Africa) [7] showed that the total incidence of allergic rhinitis (AR) is 15%-25%, and reaches over 40% in children and young people.

In terms of treatment, current guidelines recommend nasal spray glucocorticoids as the first choice. However, due to the dynamic effect of the spray and the irritation of aqueous solutions on the nasal cavity, most children are uncooperative. Moreover, most parents believe that hormones may affect their children's physical development, which significantly reduces treatment compliance. Only a small number of parents can adhere to long-term use of nasal spray hormones. For systemic anti-allergic treatment, it usually takes 1-3 weeks for the drugs to achieve stable therapeutic effects. Clinical observations show that most parents are worried about drug side effects, and even drug resistance after long-term use. Some children experience adverse reactions such as drowsiness and headache. Given the current situation, few families can adhere to long-term medication.

Aqi (the barrier agent) forms a protective film in the nasal cavity based on the electrostatic principle combined with the physiological characteristics of the nasal cavity, which adsorbs allergenic particles and blocks their absorption in the nasal cavity, thereby alleviating symptoms of allergic rhinitis. The nasal mucosa barrier agent is safe to use with few side effects. Through clinical application, we can further study a new type of drug that forms a tight isolation film on the surface of the nasal mucosa after application, which is not easily absorbed, can adsorb allergenic particles, and block the absorption of allergens by the

Table 2.

The results showed that there was no statistical significance between the two groups of patients before treatment, while the difference in the average score during the treatment cycle was statistically significant (P < 0.05).

Group	Number of cases	Before treatment	Treatment cycle
Control group	97	7.594±1.0237	2.056±1.8
Observation group	87	7.061±1.0849	1.285±1.6
t		0.047	-2.553
P		0.964	0.012

nasal mucosa, thus achieving the anti-allergic purpose

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EOSINOPHILIC ESOPHAGITIS AND EOSINOPHILS BEYOND THE ESOPHAGUS: A REVIEW OF NON-EOE EOSINOPHILIC GASTROINTESTINAL DISEASES

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ABSTRACT

Eosinophilic esophagitis is a chronic inflammatory Th2 cell-type immune-mediated disease characterized by the presence of more than 15 eosinophils in esophageal biopsy material using a high-power field (HPF). It is recognized as the most common cause of dysphagia in the population. Its prevalence is on average one patient per 2500 population, although the disease is characterized by a high prevalence in Caucasians and/or males. This is associated with the presence of single-nucleotide polymorphisms (SNPs) in pseudoautosomal regions of sex chromosomes. Exact statistical data on eosinophilic esophagitis in many countries, including Georgia, are unknown. This is associated with incorrect or delayed diagnosis. Modern diagnostic principles include the assessment of the disease by a gastroenterologist based on endoscopic findings, using the EREFS classification (total score: 8), which includes five main signs: edema, rings, exudate, fissures, and strictures in the esophageal tube. Eosinophilic esophagitis requires appropriate differential diagnosis with diseases such as gastroesophageal reflux disease (GERD), celiac disease, various intestinal malformations, food allergies, and diseases with other functional disorders of the esophagus. The code of the etiopathogenesis of eosinophilic esophagitis is supplemented by the existence of eosinophilic gastrointestinal diseases (Non-EoE-EGIDs), among which there are significant differences in immunopathophysiology, clinical, and paraclinical manifestations. Based on a systematic review of the literature, we discussed the main aspects of eosinophilic esophagitis and eosinophilic gastrointestinal diseases and presented the differences between them in the form of diagrams and tables. Based on the systematic analysis, we also determined that the main treatment options include the elimination of food allergens, the use

of proton pump inhibitors (PPIs), and topical corticosteroids. Studies are underway on the future use of monoclonal antibodies, in particular anti-IL-5 and anti-IL-13 antibodies. 60% of patients with eosinophilic esophagitis have a history of allergic diseases such as asthma, rhinitis, atopic dermatitis, and food allergies. Therefore, the disease can be considered an important link between gastroenterology and allergology, requiring an interdisciplinary approach, timely diagnosis, and treatment.

Keywords: *Eosinophilic Esophagitis, Th2 Cells, Cytokines, EREFS, Diet*

ARTICLE

Eosinophilic esophagitis is a chronic inflammatory Th2 cell-mediated immune disease characterized by the presence of more than 15 eosinophils in esophageal biopsy material using high-power field (HPF). It is recognized as the most common cause of dysphagia in the population. Its prevalence is approximately one patient per 2,500 population. A high prevalence of the disease characterizes Caucasian origin and male gender. According to epidemiological studies conducted in Western countries, the prevalence of non-eosinophilic esophagitis (non-EoE) is significantly lower than that of eosinophilic esophagitis, with fewer than 10 cases per 100,000 population. Eosinophilic esophagitis occurs mainly in people under 50 years of age. It occurs in 2%-7% of patients undergoing upper endoscopy for any reason and in 12%-23% of patients undergoing endoscopy for dysphagia. Pathogenesis. The pathogenesis of eosinophilic esophagitis (EoE) has been extensively studied, and the underlying mechanisms have been described. Dysfunction of the epithelial barrier is considered to be a central mechanism in the pathogenesis of eosinophilic esophagitis. In virtually healthy individuals, the epithelium of the esophageal tube provides a physical and immune barrier to allergens and microbes.

In EoE, this barrier is weakened, leading to deeper penetration of allergens and activation of the immune system. When epithelial cells are damaged, thymic stromal lymphopoietin (TSLP), interleukin-33 (IL-33), and interleukin-25 (IL-25) are released. These cytokines activate type 2 T-helper cells, which secrete IL-5 and IL-13. IL-5 is essential for eosinophil proliferation, while IL-13 promotes epithelial barrier disruption and enhances eotaxin-3 expression in epithelial cells. Regarding genetic and epigenetic factors, it has been proven that in EoE there are a number of genes whose mutations are involved in the development of the disease. Among them, the most important genes are: TSLP (thymic stromal lymphopoietin gene), CAPN14 (calpain-14 gene), CCL26 (eotaxin-3 gene), and FLG (filaggrin gene). Interesting findings have been observed regarding the esophageal microbiome. In particular, the latter differs significantly between healthy individuals and EoE patients. During EoE, the number of Haemophilus, Neisseria, Campylobacter, and Corynebacterium increases, while the diversity of commensal bacteria decreases. An imbalance in the microbiome contributes to the activation of the immune system and hypersensitivity to allergens. Studies have shown that frequent use of antibiotics in children and birth by cesarean section are associated with changes in the microbiome and, consequently, an increased risk of developing EoE. In addition, environmental pollution and a Western diet (high in fat and sugar) may play a significant role in disrupting immune balance.

The clinical presentation of patients with eosinophilic esophagitis varies with age. The disease is characterized by the following symptoms: reflux, difficulty swallowing, weight loss, abdominal or chest pain, sleep disturbances, and refusal to eat. In non-EoE-EGID, the symptoms depend on which segment of the gastrointestinal tract is affected. If the lesion is in the stomach and duodenum, epigastric pain, nausea, and vomiting are common. If the ileum or colon is involved, abdominal pain and diarrhea are predominant. Patients with eosinophilic esophagitis often report difficulty swallowing and belching. The most serious complication of this disease is Boerhaave syndrome, in which the esophageal tube can rupture suddenly.

As for paraclinical manifestations, an increase in the number of eosinophils in the peripheral blood is observed in 70–80% of patients with non-EoE-EGID, which is much higher than in cases of eosinophilic esophagitis. Also, an increase in IgE is determined in approximately 50%. An increase in CRP and a decrease in albumin levels are observed in 20–30% of patients, which indicates systemic inflammation and a more severe course of the disease in non-EoE-EGID than in EoE.

HYPOALBUMINEMIA RARELY USUALLY

Endoscopic signs in eosinophilic esophagitis are assessed using the EREFS scale, which includes: E – edema (swelling), R – rings (rings), E – exudates (white plaques), F – furrows (grooves), S – strictures (restrictions/narrowing). It is worth noting that in some pa-

Criteria	EoE	Non-EoE-EGID
Epidemiology	50/10, 000	10/ 100, 000
Age	40-50	Any Age
Sex	Female	Female
History of atopic diseases	>50%	>50%
Symptoms	Dysphagia	Abdominal pain, diarrhea
Eosinophilia	Rarely	Frequently
Hypoalbuminemia	Rarely	Usually

tients the endoscopic picture is completely normal; therefore, biopsies should be taken from at least 6 different areas, from the upper and lower parts of the esophagus. During endoscopic examination, the so-called 4-14-4 rule is provided, which implies taking 4 biopsies in the range of 14 and 4 cm from the gastroesophageal junction.

Pathological features of the disease include basal cell hyperplasia (>30% of total thickness), papillary elongation (>50% of epithelial thickness), intraepithelial eosinophils and microabscesses, eosinophil degranulation, and subepithelial fibrosis. These changes create a typical pathomorphological profile of chronic inflammation.

In the case of allergen identification, an elimination diet or an elemental (allergen-free) diet is theoretically the most targeted approach; however, detection using antibodies to allergens (anti-IgE) is not distinguished by high accuracy - its specificity and sensitivity are low. Accordingly, many studies have focused on empirical elimination diets (i.e., allergen removal without prior testing). According to a recent meta-analysis (more than 1700 patients), in the case of eosinophilic esophagitis, an empirical elimination diet is more effective than a targeted diet (based on allergen testing). Based on a systematic review, it is currently known that an elemental diet led to improvement in 75.8% of patients, elimination of 6/7 foods in 85.3%, and the exclusion of milk alone in about 62%. The 6-Food Elimination Diet (SFED)-avoiding dairy, wheat, soy, eggs, tree nuts, and seafood-is the prototypical empirical elimination diet in the United States.

Proton pump inhibitors (PPIs). PPIs are widely used in eosinophilic esophagitis, partly because of their anti-Th2 anti-inflammatory effects and their ability to reduce acid-induced mucosal damage. Meta-analyses of studies have shown that patients treated with proton pump inhibitors achieve histological remission.

Leukotriene receptor antagonists. Montelukast has been successfully used in patients with eosinophilic esophagitis and is effective in double-blind studies. The drug has few side effects, but its efficacy is limited. Therefore, it is mainly prescribed for relatively mild forms or when it is necessary to reduce the dose of glucocorticoids.

Antihistamines and sodium cromoglycate. These drugs belong to the antiallergic drugs and their action is explained as follows: antihistamines block the effect of histamine, and cromoglycate stops the degranulation of mast cells. These drugs are widely used in atopic diseases and may have some effect in mild cases of eosinophilic esophagitis, although the necessary evidence is not available at this stage. Individual case reports and small series studies indicate that they reduce symptoms and inflammation in some patients.

Systemic glucocorticoids. Prednisolone is the most commonly used drug for the treatment of eosinophilic esophagitis. Although no double-blind clinical trial has been conducted on this topic, multiple observations have shown that treatment with a dose of 30-40 mg/day induces both clinical and histological remission in most patients (even if temporary). Therefore, prolonged or repeated courses are often required.

Topical glucocorticoids. Budesonide has been successfully used in eosinophilic esophagitis and has already been approved as a treatment. The nebulized form of budesonide has shown clinical and histological remission in patients in several studies.

Biologics. Antibodies directed against specific molecular targets associated with the development of eosinophilic esophagitis are currently being studied. Dupilumab is a monoclonal antibody that targets the IL-4 and IL-13 receptor domains. It is still under investigation.

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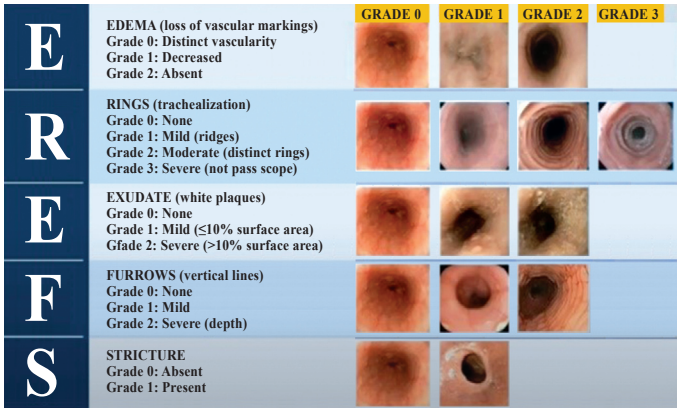

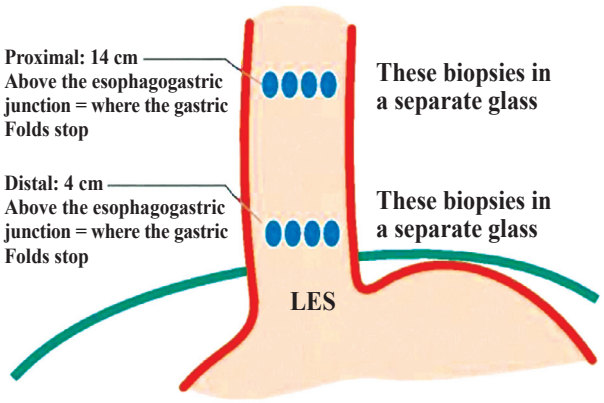

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MY "STRANGER" AMERICAN FRIEND DENNIS COREY

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Two or three years prior to Russian-Georgian War, during one of my then usual business trpis, in some airport of some European country, in a half empty hall of a transit zone, I was scrolling through a book while expecting my flight. A smart looking man of respected age took a sit nearby. His loud voice, style and specific gesticulation left no doubt that I was dealing with the representative of "Wild West".

We got acquainted soon. Dennis, as I had assumed, was American, around 55-60 years old from Chicago – ordinary American – friendly, curious.

I cannot recall now where was he heading to. I do remember his story about the family, business, and friends. He was really interested in Georgia and promised to visit my country. We talked for about an hour, exchanged the business cards and so we ended.

In 2008 during the August war I worked in the Ministry of Foreign Affairs and along with my colleagues through those hardest days and nights stayed in our offices around the clock. During the whole day and especially in the evening we gathered in the office of the Minister of Foreign Affairs (Gregory Vashadze). It was a regular end of the meeting of 9 or 10 August 2008, I went back to my office late night (early morning) by 2-3 am and sat by my computer. While checking on email I found a message from a stranger address. Even now I cannot fully understand how come I did not delete it unread, as all of us do on daily basis.

The letter began with a reminder: - " I am the guy you met in the airport two years ago. Do you remember me?" I was confused and could not figure out the purpose of sending that kind of messages during the war.

But the words that followed were touching indeed: - "I have got couple of questions for you: Are you and the rest of your family ready to leave for the US immediately? If yes I will inform the Embassy of USA in Georgia in order to obtain American visas a.s.a.p. Also, I am ready to cover the travel expenses for you and the members of your family".

Frankly, I read the letter and could not believe my eyes, was it still possible that there were genuine humans in the world? Moreover, he neither was a relative, nor a friend, practically a stranger, which, in times of adversity, is ready to give you and your entire family a hand of help.

Of course my family and I had never thought of leaving our country even for a second and of course I informed Dennis about that. But I really was loaded with emotions. Especially, against the background of Russia of the same faith destroying your country and flattening to earth my mother's birthplace Shida Kartli, a stranger American is offering you his help.

Some tendencies existing nowadays in Georgia inspired me of writing this letter. May God forbid Georgians from not distinguishing friend from foe, but it's beyond controversy, that some corrupt immoral individuals squeak relentlessly pushing us at least towards confusion and at worst towards total capitulation. Nor will we waver, Georgians, we will overcome difficulties and we will emerge victorious.

P.S. *Despite the fact that I have a couple of acquaintances and friends in Russia none of them did even try to express any kind of condolence for the atrocities thrown over my country.*

PRACTICING PHYSICIANS

NEW ADVANCES IN ACUTE DISSEMINATED ENCEPHALOMYELITIS

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ABSTRACT

Acute disseminated encephalomyelitis (ADEM) is a demyelinating disease of the central system induced by infection or vaccination. It can occur at any age and occurs in children without gender differences. It is characterized by extensive white matter damage, various clinical manifestations and recurrence. However, the etiology and pathogenesis of ADEM need to be further discussed, and non-specific biochemical markers are used to make a definite diagnosis, mainly through clinical symptoms combined with laboratory and imaging results.

1. INTRODUCTION

Acute disseminated encephalomyelitis (ADEM) is an immune-mediated demyelinating disorder characterized by acute-onset encephalopathy and multifocal neurological deficits. Predominantly affecting children aged 3-10 years, its global incidence ranges from 0.2-0.8 per 100,000 with male predominance (male-to-female ratio 1.7:1)[1]. Post-infectious triggers account for 65-84% of pediatric cases, with 7-10% linked to vaccinations (COVID-19 and rabies vaccines in particular) [2]. A meta-analysis of 437 adults revealed higher mortality (7.8%) and residual deficits (47.5%) compared to children, underscoring age-related prognostic differences[1].

Molecular mimicry forms the etiological cornerstone, wherein pathogens (e.g., dengue virus, SARS-CoV-2) or vaccine components trigger cross-reactive T-cell responses against myelin antigens. Recent studies identify MOG-IgG seropositivity in 50-73% of childhood ADEM, defining a distinct subtype with spinal cord "H-sign" lesions and optic neuritis predilection[3]. Notably, 31.3% of Chinese pediatric ADEM cases show springtime clustering, correlating with enteroviral activity peaks[4].

Conventional diagnosis relies on McDonald MRI criteria (89.6% sensitivity for white matter lesions) and corticosteroid responsiveness (76.9% remission rate), yet faces three limitations: 24.9% diagnostic delay due to MS/NMOSD mimicry, 33% CSF false-negative rates for oligoclonal bands, and inability to predict relapse in MOG-IgG+ cohorts[5][6]. First-line methylprednisolone (20 mg/kg/day) achieves rapid remission but predisposes 23% to hyperglycemia and osteoporosis[7]).

This review synthesizes transformative advances since 2020.

2. REVOLUTION IN DIAGNOSTIC MODALITIES

2.1 Limitations of Conventional Approaches

Traditional diagnosis of ADEM relies on clinical criteria and 1.5T MRI findings, with 24.9% of adult cases demonstrating delayed diagnosis (median 19 days) due to overlap with multiple sclerosis (MS) and neuromyelitis optica spectrum disorder (NMOSD)[1]. Cerebrospinal fluid (CSF) analysis shows non-specific lymphocytic pleocytosis (64.6% sensitivity) and absent oligoclonal bands in 85% of pediatric cases, while CT scans exhibit 67.2% false-negative rates for early white matter lesions [5] [19].

2.2 Neuroimaging Innovations

Ultra-high-resolution 7T MRI now visualizes cortical gray matter microlesions (<2 mm) in 38% of ADEM patients, with susceptibility-weighted imaging (SWI) detecting hemorrhagic components in acute hemorrhagic leukoencephalitis [15]. Advanced MOGAD-specific protocols identify three key signatures: ① "fluffy" T2-hyperintense subcortical lesions (94% specificity), ② axial H-shaped cord sign in myelitis, and ③ transient perineural optic nerve enhancement[8]; Cacciaguerra et al., 2023). Diffusion tensor imaging (DTI) metrics (FA <0.25 in corticospinal tracts) predict motor deficits with 82% accuracy [18]

2.3 CSF Biomarker Advancements

Quantitative mass spectrometry reveals ADEM-specific proteomic fingerprints: GFAP/sTREM-1 ratio >4.2 distinguishes from viral encephalitis (AUC 0.91), elevated CSF CXCL13 (>250 pg/mL) correlates with relapse risk (HR 3.1), and neurofilament light chain (NfL) levels >1,800 pg/mL predict residual disability[9]. Novel exosome analysis detects CNS-specific miR-155-5p with 89% diagnostic concordance versus brain biopsy [17].

2.4 Serological Biomarker Breakthroughs

MOG-IgG cell-based assays demonstrate 73% positivity in pediatric ADEM, associated with distinct clinical trajectories: seropositive cases exhibit 62% risk of relapsing disease versus 8% in seronegative cohorts [3][8]. Multiplex antibody panels now integrate anti-GalC and anti-MBP antibodies, achieving 96% differential accuracy against MS when combined with MRI[11].

2.5 Electrophysiological Progress

Multimodal evoked potentials (EPs) show 94.1% sensitivity when combining: ① BAEP III-V interpeak latency >2.3 ms (64.7% sensitivity), ② VEP P100 >125 ms (70.6% sensitivity), and ③ SEP N20-P25 amplitude ratio <0.4 [13]. Cortical magnetoencephalography (MEG) detects gamma-band desynchronization (30-80 Hz) in prefrontal regions, correlating with cognitive outcomes ($r = -0.72$, $p<0.001$)[20].

2. ADVANCES IN THE MANAGEMENT OF ACUTE DISSEMINATED ENCEPHALOMYELITIS: A DECADE OF TRANSLATIONAL PROGRESS

2.1 Limitations of Conventional Therapeutic Approaches

First-line ADEM management has historically relied on high-dose glucocorticoid pulse therapy, yet emerging evidence highlights significant interindividual variability and long-term safety concerns. Comparative studies reveal prolonged motor recovery timelines in dexamethasone-treated cohorts (8.4 ± 2.1 days) versus methylprednisolone regimens (5.2 ± 1.8 days), accompanied by pronounced immunosuppressive effects (42% reduction in IgG levels, $p = 0.003$)[11]. While intravenous immunoglobulin (IVIG) serves as an alternative, the 2021 ADEM-IVIG trial identified adverse events-including thromboembolic complications-in 30% of participants, with limited efficacy in preventing relapses among MOG-IgG-seropositive subgroups[27]. Critically, 15% of refractory cases exhibit persistent motor deficits or cognitive impairment despite standard interventions, underscoring unmet therapeutic needs[19]. These limitations necessitate a paradigm shift toward precision medicine strategies.

2.2 Optimization of Traditional Protocols

Recent refinements in dosing regimens and combination therapies have enhanced treatment efficacy. A 2024 randomized trial demonstrated superior clinical response rates with high-dose methylprednisolone (1,000 mg/day; 94.29% efficacy) compared to conventional dosing (71.43%, $p < 0.01$), alongside 35% improvements in nerve conduction velocities[23] (Deng F, 2024). Combination therapy with IVIG and methylprednisolone reduced time to ambulation by 40% (7.2 vs. 12.1 days) and mitigated steroid-induced hyperglycemia (16.7% vs. 53.3%, $p = 0.018$) [39]. Pediatric-specific protocols emphasizing stepwise escalation-30 mg/kg/day methylprednisolone followed by IVIG (2 g/kg) for non-responders-lowered mortality in severe ADEM from 28% to 9% ($p = 0.032$)[25].

2.3 Breakthroughs in Targeted and Novel Therapeutics

Biologic agents and cellular therapies are redefining therapeutic precision. CD19-directed monoclonal antibody inebilizumab achieves complete B-cell depletion within one week, reducing annualized relapse rates by 76% (0.034 vs. 0.146, $p = 0.045$)[21]. Pioneering CAR-T cell therapy targeting BCMA (CT103A) induced sustained remission in 11/12 NMOSD/ADEM overlap patients, with 90% reductions in serum AQP4-IgG titers ($p = 0.007$) over six months[22]. In preclinical models, miR-17-5p-engineered mesenchymal stem cells enhanced axonal regeneration, elevating motor function scores by 58% ($p < 0.001$) [17] [38]. These advances underscore the transformative potential of immunomodulatory innovation.

2.4 Integrative Advances in Traditional Chinese Medicine

Synergistic integration of Eastern and Western modalities demonstrates unique therapeutic benefits. Co-administration of murine nerve growth factor with corticosteroids improved clinical response rates to 95.35% (vs. 76.74% for steroids alone) by upregulating BDNF levels (142.6 ± 18.4 pg/mL vs. 89.2 ± 15.3 pg/mL, $p < 0.001$) [24]. The "Sanjiao Regulation" theory-combining Buyang Huanwu Decoction with electroacupuncture-increased ASIA motor scores by 15.3 points ($p = 0.004$) in spinal cord injury models [27]. For neurogenic bladder dysfunction, Mahuang Fuzi Xixin Tang paired with sacral neuromodulation reduced postvoid residuals from 320 ± 45 mL to 85 ± 22 mL ($p < 0.001$), outperforming intermittent catheterization [37].

2.5 Innovations in Neurorehabilitation and Supportive Care

Early multimodal rehabilitation paradigms significantly enhance functional recovery. Robotic gait training initiated within 72 hours of symptom onset elevated Barthel Index scores by 41 points (67.5 to 108.5), with 78% achieving independent ambulation at 6-month follow-up [25]. For neurogenic bowel/bladder dysfunction, OB tamponade combined with biofeedback training reduced incontinence rates from 53.3% to 16.7% ($p = 0.012$)[35]. Pygmalion effect-based psychological interventions lowered SDS depression scores by 13.2 points (58.4 to 45.2, $p < 0.001$) and tripled treatment adherence [36]. These interventions highlight the critical role of holistic care in optimizing long-term outcomes.

3. PROGNOSIS OF ACUTE DISSEMINATED ENCEPHALOMYELITIS (ADEM)

ADEM is typically a monophasic demyelinating disorder with variable outcomes influenced by age and disease severity. While pediatric patients often achieve favorable recovery, with up to 80% attaining complete or near-complete functional restoration within months, adults exhibit poorer prognoses, as evidenced by a meta-analysis revealing 47.5% of adults retaining residual deficits and a 7.8% mortality rate[1]. Children under 10 years show particularly robust recovery, likely due to greater neuroplasticity and earlier immunotherapy initiation[34]. However, hemorrhagic variants like acute hemorrhagic leukoencephalitis (AHLE) portend grave outcomes, with a 75% mortality rate despite aggressive immunotherapies [15]. Notably, even in survivors, longitudinal studies highlight risks of subtle cognitive deficits independent of motor recovery[17].

Recent studies emphasize MRI biomarkers and treatment timing as critical prognostic indicators. Longitudinally extensive spinal lesions (≥3 vertebral segments) and deep gray matter involvement on MRI correlate with higher relapse risks and progression to multiphasic demyelinating disorders[34]; [19]. Asymptomatic brain lesions, present in 35% of pediatric cases, predict subsequent multiple sclerosis or neuromyelitis optica spectrum disorder [29]. Therapeutic latency emerges as a modifiable factor: delayed immunotherapy (>2 weeks post-onset) associates with 3.3-fold increased relapse risk compared to early intervention [34]. Additionally, emerging serological markers, including anti-myelin oligodendrocyte glycoprotein (MOG) antibodies, may stratify relapse-prone subtypes, though their therapeutic implications require validation[32].

4. FUTURE RESEARCH DIRECTIONS

Key priorities include establishing validated biomarkers and standardized treatment protocols. The role of MOG antibodies in ADEM pathobiology and their utility in predicting relapses necessitates prospective multicenter studies[32][31]. Advanced neuroimaging techniques, such as diffusion tensor imaging and central vein sign analysis, may enhance differentiation from multiple sclerosis and prognostication [33]. Mechanistic investigations into post-infectious immune dysregulation, particularly SARS-CoV-2-associated ADEM, could unveil novel therapeutic targets [30]. Crucially, international randomized controlled trials are urgently need-

ed to evaluate efficacy of emerging immunotherapies (e.g., complement inhibitors) and optimize steroid/IVIG dosing regimens [29].

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A REVIEW OF THE PROGRESS IN DIAGNOSIS AND TREATMENT OF CHILDHOOD LYMPHADENOPATHY

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Childhood lymphadenopathy is a common clinical sign in pediatrics, mostly caused by infection, and a few are related to tumors and autoimmune diseases. Its diagnosis and treatment core lies in "precise identification of the cause+targeted intervention". In recent years, there have been optimizations in etiology classification, diagnostic techniques, and treatment strategies [Reference 1] [Reference 4] [Reference 9] [Reference 10].

1. PROGRESS IN ETIOLOGICAL DIAGNOSIS: FROM "EMPIRICAL JUDGMENT" TO "STRATIFIED DIFFERENTIATION"

Traditional diagnosis relies on medical history and physical examination, and in recent years, there has been a greater emphasis on "etiological stratification", combined with laboratory and imaging techniques to improve accuracy [Reference 3] [Reference 9]:

INFECTIOUS CAUSES (ACCOUNTING FOR 70% -80%)

It is still the primary cause, which can be subdivided into viruses (EB virus, cytomegalovirus, COVID-19, etc.), bacteria (streptococcus, staphylococcus, mycobacterium tuberculosis), and special pathogens (mycoplasma, parasites) [Reference 7] [Reference 11] [Reference 13]. Among them, EB virus associated infectious mononucleosis is diagnosed by EB virus antibody (VCA IgM) and nucleic acid testing due to lymph node enlargement (often involving the neck) accompanied by fever and pharyngitis, to avoid confusion with bacterial infection [Reference 4] [Reference 9].

NON INFECTIOUS ETIOLOGY

Diagnostic techniques are more accurate [Reference 10] [Reference 12]:

Tumor type: Lymphoma (often manifested as painless and progressive lymphadenopathy) requires ultrasound-guided fine needle aspiration cytology (FNAC), and if necessary, lymph node biopsy combined with immunohistochemistry to clarify the classification; Leukemia related lymph node enlargement requires diagnosis through blood routine and bone marrow puncture [Reference 5] [Reference 8] [Reference 14] [Reference 20].

Autoimmune: For juvenile idiopathic arthritis, Kawasaki disease, etc., it is necessary to differentiate them based on inflammatory indicators (CRP, ESR), specific antibodies (such as anti cyclic citrullinated peptide antibodies), and imaging (cardiac ultrasound examination of Kawasaki disease coronary artery lesions) [Reference 12] [Reference 18].

2. PROGRESS IN DIAGNOSTIC TECHNOLOGY: NON INVASIVE PRIORITY, INVASIVE PRECISION

1. Ultrasound examination: becoming the preferred non-invasive method. By evaluating the size of lymph nodes (with a short diameter greater than 10mm, abnormalities should be noted), morphology (round shapes often indicate pathological changes, oval shapes are mostly benign), and blood flow signals (abnormally rich blood flow may indicate tumor or inflammatory activity), it is possible to preliminarily distinguish between benign and malignant and reduce unnecessary invasive examinations [Reference 3] [Reference 9] [Reference 18].

2. Laboratory testing: In addition to traditional blood routine and C-reactive protein (CRP), procalcitonin (PCT) can more accurately distinguish bacterial and viral infections (PCT significantly increases during bacterial infections, while viral infections are mostly normal); Molecular diagnostic techniques such as PCR and metagenomic sequencing can quickly detect pathogen nucleic acids, especially suitable for difficult or drug-re-

sistant pathogen infections [Reference 7] [Reference 11] [Reference 13].

3. Invasive examination: FNAC is gradually replacing traditional open biopsy due to its minimally invasive and safe nature, and is used for ultrasound to indicate abnormal lymph nodes; If FNAC cannot make a definitive diagnosis (such as suspected lymphoma), lymph node dissection biopsy should be performed to determine the cause based on pathology and immunohistochemistry [Reference 5] [Reference 8] [Reference 14] [Reference 20].

3. PROGRESS IN TREATMENT STRATEGIES: ETIOLOGY ORIENTED, INDIVIDUALIZED INTERVENTION

The core of treatment is “precise treatment based on the cause", avoiding blind use of antibiotics [Reference 3] [Reference 7] [Reference 9]:

INFECTIOUS LYMPHADENOPATHY

Viral infection: symptomatic supportive treatment is mainly used (such as fever reduction and fluid replacement), and acyclovir can be used as appropriate for EB virus infection, without the need for conventional antibiotics [Reference 4] [Reference 7] [Reference 18];

Bacterial infection: When identifying bacterial infection (such as purulent lymphadenitis), penicillin or cephalosporin antibiotics are preferred, with a course of 7-14 days. When abscess formation occurs, incision and drainage are required [Reference 7] [Reference 11];

Tuberculosis infection: Standardized anti tuberculosis treatment (isoniazid and rifampicin combination therapy) is required, with a course of 6-9 months and monitoring of drug side effects [Reference 13] [Reference 18].

NON INFECTIOUS LYMPHADENOPATHY

Tumor type: Lymphoma requires a chemotherapy regimen based on its classification (Hodgkin's lymphoma/non Hodgkin's lymphoma), with some requiring combined radiotherapy; Leukemia is mainly treated with chemotherapy, and hematopoietic stem cell transplantation may be necessary [Reference 5] [Reference 14] [Reference 18];

Autoimmune: Juvenile idiopathic arthritis requires the use of nonsteroidal anti-inflammatory drugs (such as ibuprofen) and immunosuppressants (such as methotrexate); Kawasaki disease requires early use of intravenous immunoglobulin (IVIG) and aspirin to prevent coronary artery disease [Reference 12] [Reference 18].

4. SUMMARY AND PROSPECT

At present, the diagnosis and treatment of childhood lymphadenopathy has formed a system of “etiology stratification non-invasive priority precise intervention", effectively reducing misdiagnosis rate and overtreatment [Reference 3] [Reference 9] [Reference 10]. In the future, it is necessary to further optimize the ultrasound diagnostic standards of grassroots medical institutions, promote the popularization of molecular diagnostic technology, and explore the application of biomarkers (such as circulating tumor DNA) in early identification of large and medium-sized tumor lymph nodes, in order to improve diagnosis and treatment efficiency [Reference 1] [Reference 4] [Reference 15] [Reference 16] [Reference 17].

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ABSTRACTS OF INTERESTING ARTICLES PUBLISHED IN VARIOUS JOURNALS

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RESEARCH Open Access

DOES EARLY SCREENTIME EXPOSURE OR DURATION AFFECT M-CHAT-R AUTISM SCREENING TOOL SCORE?

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ABSTRACT

Background The Modified Checklist for Autism in Toddlers, Revised (M-CHAT-R) is commonly used by pediatricians to detect early signs of ASD and guide further diagnostic evaluation, and we hypothesize that increased or early screen time exposure is associated with higher M-CHAT-R scores. Therefore, the study aims to clarify the relationship between early exposure

and duration of active screen time with M-CHAT-R scores.

Materials and methods An observational cohort study was conducted, enrolling 646 children (male – 377, female − 269) aged 16 to 30 months. Data collection was conducted over an 8-month period (January–August 2024) at three large pediatric clinics in Tbilisi, Georgia, ensuring a diverse and representative sample. Data included M-CHAT-R/F screening scores (official Georgian translation), daily screen time exposure (minutes per day), and age of initial screen exposure, including background use.

Results The analysis revealed a weak positive correlation between M-CHAT-R scores and average active daily screen time ($r(644) = 0.15$, $p < 0.001$), although only 2.3% of the variance in M-CHAT-R scores was explained by screen time. A modest association was also observed between higher M-CHAT-R scores and an earlier age of screen exposure ($\eta^2 = 0.05$, $p = 0.03$), 5% of the variance in M-CHAT-R score explained by the age of screen time exposure. Chi-square analysis indicated a statistically significant association between screen exposure before 6 months of age and M-CHAT-R risk categories ($\chi^2(2) = 12.64$, $p = 0.002$). Notably, the prevalence of high-risk M-CHAT-R scores (8 points or above) was nearly tripled in children exposed to screen time before 6 months (12.24% vs. 4.33%), a difference that reached statistical significance.

Conclusion These findings indicate that early screen time exposure is associated with an increased likelihood of high-risk M-CHAT-R outcomes (scores of 8 or above). In contrast, although there is a statistically significant weak positive correlation between average active daily screen time and M-CHAT-R scores, this variable accounted for only 2.3% of the variance. Future prospective research that incorporates potential confounding factors is necessary to further clarify these relationships. Meanwhile, adherence to the current guidelines from the World Health Organization and the American Academy of Pediatrics is advised.

Keywords: *Autism, Screentime, M-CHAT-R.*

Social, Ecological & Clinical Pediatrics
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(Tbilisi, Georgia)

FERROMAGNETIC NANOSYSTEMS IN BIOMEDICINE – SOME EXAMPLES

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ABSTRACT

Ferromagnetic nanosystems are versatile tools in biomedicine, with applications ranging from imaging and drug delivery to cancer therapy and tissue engineering. Ongoing research aims to optimize their properties and expand their clinical applications. On the basis of two very interesting and import phenomena, which are actively developing in current medical physics and biophysics, particularly magnetic hyperthermia and magnetically activated ATP reactions, we were investigated some physical and biochemical effects related to mechanisms of iron and manganese oxides participation in electrodynamical and biothermophysical processes and their acceleration.

Ferromagnetic nanoparticles can be exposed to alternating magnetic fields (AMF) or static magnetic fields. The oscillations of magnetic nanoparticles in these fields may result in localized heating, mechanical agitation, or altered molecular dynamics. These effects, mainly in case of Iron and Manganese Oxides and their nanosystems, should be basis of farther development of methods of magnetic hyperthermia of diseased cells as well as new investigation related to acceleration of ATP hydrolysis in the following ways: Localized Heating, Magnetic Actuation, Catalytic Activities, Creation of Ferromagnetic Nanobiocomplexes, Magnetic Field-Influenced Conformational Changes, etc. We are also thinking that, ferromagnetic nanosystems as charge carriers have an ability to transfer the information – signals about the all stages of the occurred processes.

Social, Ecological & Clinical Pediatrics
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ON SOME PECULIARITIES OF THE FUNCTIONING OF HUMAN GENES

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ABSTRACT

Thus, from the second half of the last century to the present, biology, and in particular molecular biology and genetics, has entered a very unusual and interesting phase of amazing transformations and development. Given that many genetic and epigenetic programs operate in various types of living organisms, including humans, we have tried to once again draw your attention to the many processes taking place in living organisms on identity and, of course, on some of the peculiarities of the work of the genes involved in these processes. At the same time. Currently, there are a number of diseases worldwide whose genetic mechanisms of origin and spread have not yet been fully studied. Such diseases include, for example, Tourette syndrome, prion diseases, Schizophrenia, etc. And yet, despite the fact that doctors somehow manage to achieve some success in treating these types of diseases, we are sure that with the help of molecular biology, genetic engineering methods and, of course, without widespread use and implementation in medicine artificial intelligence, we will not truly achieve the desired results.

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NEW CHALLENGES IN PARASITOLOGY

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ABSTRACT

The above cases demonstrate that the problems and challenges in parasitology in the 21st century place even greater emphasis on this science, Because in the context of global warming, it is becoming clear how much the parasite has an impact on the host's behavior and lifestyle. Accordingly, the great sensation (we mean the discovery of an adult parasite - the pig solitaire in the human brain) that was recorded in Georgia, perhaps it is a hint that the world is undergoing major changes in all directions, and without the development of sciences armed with modern methods, we will face a complete catastrophe in the near future, if we do not take into account the existing reality.


陕西省中医药管理局雷颖局长
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