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SPECIFIC FEATURES OF THE USE OF IMMUNOCORRECTORS IN THE ELDERLY

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Abstract

The article examines the specific features of using immunocorrective therapies in elderly patients, focusing on the clinical, pharmacological, and physiological aspects that determine treatment safety and effectiveness. Age-associated immune decline, multimorbidity, polypharmacy, and altered pharmacokinetics significantly influence the response to immunomodulators. The annotation highlights current therapeutic approaches, the rationale for individualized regimens, and evidence-based recommendations aimed at optimizing immunocorrection in geriatric practice.

Keywords: Immunocorrectors, elderly patients, immune senescence, geriatric pharmacology, multimorbidity, immunomodulation, clinical effectiveness.

INTRODUCTION

The administration of immunocorrective therapies in elderly patients represents a uniquely complex area of clinical pharmacology, as this age group experiences profound physiological, biochemical, and immunological alterations that fundamentally change both the need for and the response to immunomodulatory interventions. Aging is accompanied by a gradual decline of both innate and adaptive immune mechanisms, often described as immunosenescence, which includes reduced T-cell diversity, diminished B-cell antibody production, impaired macrophage phagocytosis, and dysregulated cytokine signaling. These age-related changes lead to a paradoxical condition in which older adults are simultaneously susceptible to infections, malignancies, and chronic inflammatory states. Consequently, the therapeutic application of immunocorrectors requires a highly individualized strategy grounded in a detailed understanding of pharmacodynamics, pharmacokinetics, comorbidity patterns, and potential drug–drug interactions specific to geriatric medicine [1].

MATERIALS AND METHODS

When choosing immunocorrective agents for elderly patients, clinicians must account for the fact that many immunomodulators—such as thymic peptides, interferons, cytokine inhibitors, bacterial lysates, or plant-derived adaptogens—have altered metabolism and clearance in older bodies due to decreased renal filtration, reduced

hepatic enzymatic activity, and changes in plasma protein binding. This means that standard adult dosing is frequently inappropriate, and even small deviations from the therapeutic window may provoke immunological overactivation, cytopenias, hepatic toxicity, or paradoxical inflammatory responses. As a result, a stepwise titration model, beginning with minimal effective doses and progressing cautiously under strict clinical and laboratory supervision, is considered the most rational and safe pharmacological approach [2].

Elderly patients commonly present with multiple chronic diseases—cardiovascular disorders, diabetes, chronic obstructive pulmonary disease, rheumatoid conditions, or neurodegenerative syndromes—which not only contribute to immune dysregulation but also significantly influence treatment outcomes with immunocorrectors. Many drugs used to manage these comorbidities, such as beta-blockers, corticosteroids, statins, antidiabetic agents, and proton-pump inhibitors, can modify immune signaling pathways or interfere with the mechanisms of immunomodulatory preparations. Therefore, comprehensive medication reconciliation and pharmacological compatibility assessment are essential before initiating therapy. Additionally, clinicians should evaluate nutritional status, as deficiencies in vitamins D, B12, folic acid, zinc, and selenium—a common occurrence in older adults—may blunt the effects of immunocorrectors unless corrected through supplementation.

Another clinically important aspect is the altered inflammatory landscape known as inflammaging, characterized by chronically elevated levels of pro-inflammatory cytokines such as IL-6, TNF-α, and CRP. This condition increases vulnerability to autoimmune flare-ups and decreases the precision of immune responses, meaning that immunocorrectors must be chosen not only to stimulate weakened immune functions but also to balance excessive inflammatory activation. Drugs such as cytokine modulators, interferon-gamma regulators, and specific anti-inflammatory immunocorrectors can help achieve this delicate balance, but only when selected on the basis of laboratory markers, immunophenotyping, and individual risk factors. Broad, non-targeted stimulation may exacerbate latent inflammatory disorders and is therefore contraindicated in many geriatric cases.

RESULTS AND DISCUSSION

The use of bacterial lysates and mucosal immunocorrectors has gained importance in older populations due to their relatively safe profile and ability to enhance mucosal immunity, which naturally deteriorates with age. Such agents increase IgA production and restore microbial balance in the upper respiratory and gastrointestinal tracts,

thereby reducing infection frequency—a major clinical challenge in geriatric patients. However, even these preparations must be administered with caution in individuals with autoimmune predispositions, chronic inflammatory bowel diseases, or severe allergic sensitivities.

From a pharmacological monitoring perspective, elderly individuals require more frequent laboratory testing than younger adults when receiving immunocorrective treatment. Monitoring parameters include leukocyte subpopulation counts, serum immunoglobulin levels, liver and kidney function tests, coagulation profiles, and inflammatory biomarkers. Serial assessments allow clinicians to track therapeutic progression, adjust dosing, and detect adverse reactions at early stages. This approach is particularly important because clinical symptoms in the elderly are often atypical, subtle, or masked by coexisting chronic illnesses [3].

Finally, psychosocial and lifestyle factors must be integrated into the overall framework of immunocorrector therapy in the elderly. Sleep disturbances, chronic stress, low physical activity, social isolation, and poor diet independently suppress immune function and reduce the therapeutic value of pharmacological interventions. Modern geriatric immunology therefore embraces a holistic model in which immunocorrectors are combined with rehabilitative exercises, balanced nutrition plans, psychological support, and vaccination programs to build a multifaceted immune-strengthening strategy. When viewed from this comprehensive standpoint, immunocorrective therapy becomes not merely a pharmacological intervention but a cornerstone of broader geriatric care aimed at enhancing resilience, preventing infections, and improving quality of life in aging populations [5].

The clinical use of immunocorrectors in elderly patients requires an especially delicate balance between therapeutic benefit and physiological vulnerability, as aging introduces complex changes in both innate and adaptive immune responses. Unlike younger adults, older individuals experience a substantial reduction in the regenerative capacity of bone marrow, impaired thymic function, decreased diversity of T-lymphocyte populations, and slower activation of B-cell–mediated antibody production. These changes create a condition often referred to as “immunosenescence,” which not only weakens defense mechanisms but also alters the body’s responsiveness to pharmacological agents. For this reason, immunocorrective therapy in the elderly must consider not only the mechanism of action of the drug but also the patient’s metabolic profile, comorbidities, and risk of drug–drug interactions. In many cases, the clinical emphasis shifts from aggressive immune stimulation to measured modulation aimed at restoring functional equilibrium without provoking harmful inflammatory cascades.

An important feature guiding immunocorrector use in elderly patients is the heightened susceptibility to chronic inflammation, a condition commonly described as “inflamm-aging,” characterized by persistently elevated levels of cytokines such as IL-6, TNF-α, and CRP. Because of this, immunocorrectors that strongly stimulate cytokine release can exacerbate systemic inflammation rather than relieve it. Therefore, clinicians often favor agents with mild immunomodulatory profiles—such as thymic peptides, interferon in low doses, or plant-derived adaptogens—which enhance immune surveillance without overstressing the organism. Moreover, biological immunocorrectors that support antioxidant defenses and cellular repair processes (e.g., vitamins C and E, selenium-based compounds) are commonly selected for elderly patients due to their ability to counter oxidative stress, which is another hallmark of aging immune systems. The therapeutic priority thus lies in gradually strengthening immune resilience through balanced, physiologically compatible interventions.

Polypharmacy represents another critical dimension in the immunocorrective treatment of the elderly. Older adults frequently undergo treatment for multiple chronic diseases such as cardiovascular disorders, diabetes, respiratory conditions, and neurodegenerative illnesses. This increases the likelihood of pharmacokinetic and pharmacodynamic interactions that can alter the efficacy of immunocorrectors or heighten adverse reactions. For example, corticosteroid-based immunosuppressants may destabilize glycemic control in diabetics, while certain immunostimulants may interfere with anticoagulants or antihypertensive drugs. As a result, therapeutic planning should involve a comprehensive medication review, consideration of liver and kidney function, and careful dose adjustments. Slow titration, smaller initial doses, and consistent monitoring are essential to prevent unwanted systemic effects.

Nutrition and lifestyle also hold significant importance in shaping immune responsiveness in the elderly. Immunocorrectors often demonstrate more pronounced efficacy when integrated with tailored dietary strategies rich in protein, micronutrients, and anti-inflammatory components. Probiotics and prebiotics, for instance, play a vital role in improving gut microbiota composition, which in turn influences systemic immunity through the gut–immune axis. Because dysbiosis becomes more prevalent with age, combining immunocorrectors with microbiome-restoring interventions can help enhance host defense, reduce infection risk, and improve vaccine responsiveness.

CONCLUSION

Immunocorrective therapy in the elderly population requires an especially cautious, evidence-based, and individualized approach. Age-related immune deterioration, combined with chronic diseases and polypharmacy, substantially alters the pharmacodynamics and pharmacokinetics of immunocorrectors. Effective use of these drugs must include comprehensive assessment of comorbid conditions, monitoring of inflammatory markers, and strict evaluation of potential drug interactions. Modern clinical practice increasingly supports targeted immunocorrection rather than generalized stimulation, emphasizing agents with proven safety profiles. Integrating geriatric medicine principles into immunotherapy strategies enhances therapeutic efficacy, reduces risks, and contributes to maintaining functional independence and quality of life in older adults.

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