Modern American Journal of Medical and Health Sciences
ISSN (E): 3067-803X
Volume 01, Issue 08, November, 2025
Website: usajournals.org

THE ROLE OF IMMUNOLOGICAL RESEARCH IN THE HEALTHCARE SYSTEM OF UZBEKISTAN

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Abstract
Modern medicine is increasingly paying attention to the human immune system, as it plays a key role in maintaining health and protecting the body from infectious, autoimmune, tumor, and allergic diseases. Immunological studies allow us to identify primary and secondary immunodeficiency states, allergic, autoimmune and inflammatory processes.

Keywords: immunology, patients, immune status, immunoglobulins, cytokines, Uzbekistan.

Introduction

In recent years, Uzbekistan has seen an increase in the number of patients with immunopathological syndromes, making this area particularly relevant.
The aim of the study was to investigate the characteristics of the immune status in patients with chronic infectious and inflammatory and allergic diseases, as well as to evaluate the role of immunological studies in the diagnosis and treatment of these conditions.

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Immune imbalance can be a consequence of chronic infections and stress factors, as well as the result of unfavorable environmental and social conditions, which is especially relevant for countries with active climatic and demographic changes, including Uzbekistan.

In recent years, the republic has seen an increase in the number of patients with chronic inflammatory and allergic diseases characterized by secondary immunodeficiency states. Despite the development of laboratory facilities, immunological diagnostics have not yet been widely implemented in regional healthcare facilities. Diagnosis is often made without considering immunological status data, which complicates the selection of appropriate therapy and monitoring its effectiveness.

Immunological studies allow: objectively evaluate the functional activity of various parts of the immune system (humoral, cellular, cytokine); identify latent forms of immune deficiency;individualize treatment and diagnostic approaches and monitor the condition of patients.

Thus, the study of immunological parameters in patients with various pathological conditions is an important area of modern clinical medicine. The relevance of this study is determined by the need to assess the role of immunological tests in the diagnosis, treatment and prevention of diseases in the healthcare system of Uzbekistan.

Materials and Methods

The study included 60 patients (35 women and 25 men) aged 18 to 65 years, who were followed from 2024 to 2025.

Patients were divided into two groups:

Group I (n = 30) — individuals with chronic infectious and inflammatory diseases (bronchitis, pyelonephritis, chronic tonsillitis, etc.);

Group II (n = 30) — patients with allergic diseases (bronchial asthma, atopic dermatitis, allergic rhinitis).

The control group consisted of 20 practically healthy individuals.

The following immunological studies were conducted:

1. Determination of the concentration of immunoglobulins (IgA, IgM, IgG, IgE);

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2. Assessment of the subpopulation composition of lymphocytes (CD3+, CD4+, CD8+, CD19+, NK);
3. Determination of the level of circulating immune complexes (CIC);
4. Determination of the concentration of cytokines (IL-6, IL-10, TNF-α) by ELISA.
All patients gave informed consent to participate in the study.

Research Results

Analysis of the obtained data revealed the following patterns:
In patients of group I, a significant decrease in the level of IgA and IgG was found compared to the control group ($p < 0.05$), which indicated a decrease in the humoral component of immunity.
In patients of group II, a significant increase in IgE and IL-6, IL-10, characteristic of allergic inflammation, was noted.
In both groups, a decrease in CD4+ lymphocytes and an increase in CD8+ were observed, indicating an immune imbalance.
The level of CIC was elevated in 70% of the examined patients, which correlated with the activity of the inflammatory process.
Table 1. Main indicators of immune status in examined patients
Indicator Control Group I Group II
IgA (g/l) 2.3 ± 0.4 1.6 ± 0.3 2.1 ± 0.4
IgG (g/l) 12.5 ± 1.2 9.8 ± 1.0 11.3 ± 1.1
IgE (IU/ml) 60 ± 20 120 ± 35 260 ± 40
CD4+/CD8+ 1.8 ± 0.3 1.2 ± 0.2 1.1 ± 0.2
IL-6 (pg /ml) 12 ± 3 22 ± 4 30 ± 5

Discussion

The data obtained confirm that immunological studies allow us to objectively assess the state of the immune system and identify disorders even in latent diseases.

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Signs of secondary immunodeficiency have been identified in patients with chronic infections, which requires the inclusion of immunotherapy in complex treatment.

In patients with allergic diseases, a pronounced Th2-type immune response was observed, accompanied by hyperproduction of IgE and cytokines IL-6, IL-10.

These results confirm the need for immunological testing not only in specialized institutions but also in general medical practice. The introduction of such tests into Uzbekistan's healthcare system will improve the diagnosis, prevention, and management of chronic diseases.

Conclusion

Immunological studies have high diagnostic and prognostic potential. They allow:Evaluate the effectiveness of treatment;Determine the type of immune disorder;Prescribe targeted immunotherapy.

The introduction of systematic immunological monitoring of patients into clinical practice in Uzbekistan contributes to improved diagnostic quality, individualized therapy, and the prevention of complications.

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