MODERN LABORATORY DIAGNOSIS PATIENTS WITH THE RHEUMATIC DISEASES

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Obtaining objective information about the presence and nature of immunopathologic changes in the examined patient, which is an important tool for early diagnosis, assessment of activity, severity of course, prognosis of the disease and effectiveness of therapy [1,2].

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An important task of standardization of RD laboratory diagnostics is the comparison and harmonization of immunological tests with international and national reference materials (certified reference materials) and research methods, databases of reference limits of analyzed biomarkers, algorithms for evaluation of the obtained results [3,4,5].

Serologic tests related to the detection of circulating autoantibodies occupy a central place in the laboratory diagnosis of RD. Positive results of autoantibodies are among the diagnostic criteria of systemic RD, are used to assess the activity and prognosis of these diseases; they play an important role in the diagnosis of RD at an early stage, allow to identify individual clinical and laboratory subtypes of RH, serve as predictors of the development of autoimmune RD in asymptomatic patients [4,5,6].

In autoimmune RH, autoantibody testing is performed primarily to confirm the diagnosis in patients with few clinical manifestations. Detection of autoantibodies in the absence of clinical signs is not sufficient for the diagnosis of autoimmune disease. There is an increase in the frequency of autoantibody detection in elderly and elderly people, against the background of taking medications, in viral and bacterial infections, malignant neoplasms, in healthy relatives of patients with autoimmune diseases [4,8,9].

When assessing the clinical significance of autoantibodies, it is necessary to take into account the persistence and severity of their hyperproduction. In infections, moderate transient autoantibody formation is observed, and in autoimmune diseases, persistent pronounced hyperproduction is observed [4,10,11].

Autoantibodies specific for only one RD are very rare. Autoimmune RDs are characterized by the simultaneous presence of several types of autoantibodies in one

serum, the so-called autoantibody profile, the evaluation of which significantly increases the diagnostic value of the determination of these biomarkers. Standard autoantibody profiles for the diagnosis of systemic RD have been developed. Non-specific immune disorders (hyperimmunoglobulinemia, decreased complement concentration) may indirectly indicate the development of systemic RD and serve as indications for the study of autoantibodies [4, 5].

The main diagnostic laboratory markers of RD are antinuclear antibodies (ANA), rheumatoid factor (RF), antibodies to citrullinated proteins (ACB), antineutrophil cytoplasmic antibodies (ANCA), antiphospholipid antibodies (APL). A list of primary (screening), secondary (confirmatory) and additional serologic tests for the diagnosis of autoimmune rheumatic diseases has been developed [3,6,7].

The most useful markers of the acute-phase response in RD are COE and C-reactive protein (CRP). According to the data of RCTs, cohort and descriptive studies, POP and CRP allow to assess the inflammatory activity of the disease, the nature of progression and prognosis of outcomes of the chronic inflammatory process, as well as the effectiveness of anti-inflammatory therapy [4,6,7].

Other laboratory biomarkers of RH (cytokines, markers of endothelial activation, immunoglobulins, immune complexes, cryoglobulins, components of the complement system, lymphocyte subpopulations, genetic markers, bone and cartilage metabolic parameters, markers of apoptosis, etc.) are of less clinical importance compared to autoantibodies and indicators of the acute phase of inflammation. They may be useful for monitoring disease activity and response to treatment (data from descriptive studies) [2, 4].

Antinuclear antibodies (ANA) are a heterogeneous group of autoantibodies reacting with various components of the nucleus. “The gold standard and primary screening method for the determination of ANA in serum is the indirect immunofluorescence reaction (NIRF) using cryostat sections of mouse or rat liver (kidney) or HEp-2 cells (human laryngeal cancer epithelial cells) as a substrate. When ANA are tested by NRIF, they are traditionally designated as antinuclear factor (ANF). NRIF results are evaluated by indicating the maximum titer of ANF detection in the tested sera, as well as the intensity and type of immunofluorescence [11,12,13].

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