Spectrum Journal of Innovation, Reforms and Development
Volume 13, Mar., 2023 | ISSN (E): 2751-1731
Website: www.sjird.journalspark.org

INFLAMMATORY ACTIVITY AND RENAL PATHOLOGY IN LUPUS NEPHRITIS

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To solve the problems in the surveyed 45 patients: examination, laboratory complex, immune and instrumental methods. All 45 patients with SLE kidney disease manifested itself in the form of lupus nephritis. Syndrome hypertension vstre-chalsya in 35.5% of cases, the syndrome of chronic renal failure in 37.7% of cases. Urinary syndrome characterized by moderate proteinuria (75.5%), hematuria (73.3%) and leukocyturia (73.3%). Positive correlation of tumor necrosis factor α, C-reactive protein level of creatinine, urea, ESR and SLE activity, which confirms the participation of the factors described in the immune process lupus inflammation.

Keywords: systemic lupus erythematosus, kidney disease, tumor necrosis factor α, C-reactive protein.

Introduction

One of the most severe manifestations of systemic lupus erythematosus is the development of lupus nephritis. Any damage to kidney parenchyma of cells leads to the production of inflammatory mediators by them, which ensure the migration of leukocytes and monocytes to the area of damage and the formation of an inflammatory infiltrate. The works devoted to the role of TNF-α are mainly experimental in nature, and only a few studies are devoted to assessing their clinical significance.

Material and Methods

To solve the tasks set in the work, patients were examined: examination, a complex of laboratory, immune and instrumental methods. The clinical part of the work was carried out on the basic of the therapeutic department of the clinic of the Samarkand Medical Institute. Immunological studies were carried out on the basic of a clinical and immunological

laboratory. 45 patients were examined. All patients met the above inclusion criteria. The diagnosis of SLE was established according to the criteria of the American College of Rheumatology (ARA, 1990). The degree of disease activity was determined using the SLEDAI, SLAM, and ECLAM index. The average age of the patients was 36,47±11.42 (16-58 years). Women predominated (80%). The most common were skin and joint syndromes in various combinations (77,6%). Patients aged 18 to 50 years were distributed by age groups with approximately equal frequency. General clinical tests of blood, urine, biochemical method were performed to determine the amount of total protein, lipoproteins, cholesterol, plasma creatinine, and urea. Additional methods of kidney examination included: Zimnitsky's test with the determination of the relative density of urine, daily diuresis was evaluated with the calculation of the diuresis coefficient (the volume of daily diuresis divided by the volume of night diuresis, the calculated rate of the coefficient is 1,5); assessment of the glomerular filtration rate using the Cockroft-Gault formula. Ultrasound examination of the kidneys was performed on an ultrasound machine with a 5c2 (5 MHz) convective sensor. The size of the kidneys, the state of the cortical and cerebral layers, the thickness of the parenchyma and its echogenicity were evaluated. Immunological studies included the determination of the concentration of C-reactive protein. To assess the acute phase changes occurring in patients, a CRP study was used as a laboratory test. Its concentration was determined in human serum by a solid-phase enzyme immunoassay using reagents from DACO (Denmark). The results were calculated using a calibration curve and expressed in mg/l. The upper limit of the norm was 5,6 mg/l. The determination of tumor necrosis factor α (TNF-a) was carried out by the enzyme immunoassay using a kit for the quantitative determination of human TNF- α in human serum from Bender MedSystems cat. # BMS223/3-96. The average is 8,19±3,64 pg/ml, the upper limit is 15,47 pg/ml. Statistical processing of the data obtained during the study was carried out using the statistical computer program Statistica 5.9 of StatSoft (USA).

Results and discussion. In all 45 patients with SLE, kidney damage manifested itself in the form of lupus nephritis. Arterial hypertension syndrome was found in 35,5% of cases, chronic renal failure syndrome in 37,7% of cases. Signs of impaired renal function to one degree or another were recorded in all patients with lupus nephritis. Urinary syndrome in most patients with SLE was characterized by moderate proteinuria (75,5%), moderate hematuria (73,3%) and leukocyturia (73,3%). No nephrotic syndrome was registered in any of the examined patients. In 15,5% of cases, lupus nephritis was manifested by acute nephritic syndrome, in the remaining 38 (84,5%) patients with moderate chronic nephritic syndrome. When assessing the urinary syndrome in patients with lupus nephritis, depending on the degree of activity of the lupus process, there was a significant increase in proteinuria in patients with SLE, depending on the activity of the process (I degree – 0,37± 0,04; II degree – 0,61± 0,08, $p<0,001$). At III degree, the increase in proteinuria did not reach the level of reliability. A similar pattern was observed in the analysis of hematuria. There was no significant change in leukocyturia depending on the degree of activity. Renal dysfunction was assessed by the level of urea in blood plasma and glomerular filtration rate (GFR) calculated by the Cockroft-Gault formula. The level of decline in kidney function was very moderate. There was only a significant increase in the level of urea compared to the control group ($p<0.001$). When analyzing changes

in the level of urea and GFR depending on the activity of the process, a significant increase in the level of urea was noted at three degrees of activity, no significant change in GFR was obtained. This result can probably be explained by the fact that changes in azotemic parameters are associated with an acute process in the kidneys, in which urea reacts more intensively than creatinine. When analyzing the indicators of azotemic metabolism, depending on the duration of the disease, there was an increase in the level of urea in patients in the first 3 years of the disease, followed by its increase after 5 years of the disease. Probably, these fluctuations in urea levels reflect the course of lupus nephritis - a cyclic alternation of exacerbation and remission. After the active lupus process, manifested by impaired renal function with an increase in urea levels (M = 9.0 + 1.08), a remission stage lasting about 2 years occurs, followed by the resumption of the active lupus process. At the same time, the glomerular filtration rate significantly decreased only in patients with a disease duration of more than 5 years compared to the control group. I would like to note the rather smooth nature of the decrease in GFR in patients with lupus nephritis. A correlation analysis of clinical and laboratory parameters in patients with SLE was carried out. There was a significant negative correlation of the age of patients with creatinine levels (r± 0,94, p<0.001). In order to assess immune disorders in lupus nephritis, the following indicators were studied: proinflammatory activity of the process - tumor necrosis factor-α (TNF-α) and C-reactive protein (CRP), the level of which in the blood was significantly higher than the control indicators in SLE. When assessing changes in immune parameters depending on the activity of SLE, a significant increase in proinflammatory and inflammatory activity was noted depending on the degree of lupus process (TNF-α and CRP). The level of CRP in the blood significantly differed from the control group at all degrees of activity. The TNF-α index in the blood significantly increased only at the III degree of SLE activity. This confirms the participation of these factors in the immune process of lupus inflammation. To assess the effect of the "time factor" on the immune process in SLE, an analysis of immune indicators was carried out depending on the duration of the disease. The indicators of TNF-α and CRP changed significantly. Thus, their highest level was observed with a disease duration of more than 5 years, and in the period from 3 to 5 years it was lower than the values of the control group. This trend probably reflects the cyclical nature of SLE, with alternating exacerbation and remission of the lupus process. Evaluation of TNF-α and CRP indicators reflecting the proinflammatory activity of the disease in lupus nephritis revealed the following relationships. There was a fairly close positive correlation between these indicators and the duration of the disease, especially in TNF-α (r ± 0,62). Positive correlations of TNF-α, CRP and with the activity of SLE (r±0,54, r±0,42, respectively) and ESR (r±0,76) were established; r±0,44, respectively), as well as the presence of a negative association of TNF-α with the level of hemoglobin (r±0,62). Attention is drawn to the fact that the strongest associations of SLE activity were noted with TNF-α indicators, which probably more reflects the severity of inflammatory activity in SLE. As for the indicators of renal function (creatinine and urea), a positive, rather strong correlation of TNF-α with creatinine (r± 0,76) and urea (r± 0,77) was noted.

Conclusions. When examining patients with SLE, arterial hypertension syndrome was found in 35,5% of cases, and chronic renal failure syndrome in 37,7% of cases. In most patients,

urinary syndrome was characterized by moderate proteinuria (75,5%), moderate hematuria (73,3%) and leukocyturia (73,3%). In 84,5% of cases, patients had moderate chronic nephritic syndrome. The severity of these changes increases depending on the degree of lupus activity (p<0,01- 0,001). Positive correlations of TNF-α and CRP with the activity of SLE, ESR, as well as the presence of a negative association of TNF-α with hemoglobin levels, a positive, rather strong correlation of TNF-α with creatinine and urea levels, which confirms the participation of the described factors in the immune process of lupus inflammation. A significant negative correlation of the age of patients with creatinine levels indicates a more severe course of the disease in young patients.

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