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KIDNEY DAMAGE IN RHEUMATOID ARTHRITIS: RELATIONSHIP WITH CARDIOVASCULAR RISK FACTORS

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ABSTRACT

Rheumatoid arthritis is characterized by high disability (70%), which occurs quite early. The main causes of death from the disease are infectious complications and kidney failure. Treatment focuses mainly on pain relief, slowing the development of the disease and repairing damage through surgery. Early detection of the disease with the help of modern means can significantly reduce the damage that can be caused to joints and other tissues. For the first time, it can manifest itself after heavy physical exertion, emotional shock, fatigue, during hormonal adjustment, exposure to adverse factors or infection. Rheumatoid arthritis is widespread all over the world and all ethnic groups are susceptible to it. The prevalence is 0.5-1% (up to 5% in the elderly) in developed countries. The average age of onset of the disease is 40-50 years for women and slightly more for men. Women get sick 3-5 times more often than men.

The formation of nephropathy in RA has a complex multifactorial character and manifests itself in various clinical and morphological variants. Thus, there are various clinical forms of kidney damage in RA (amyloidosis, glomerulonephritis, rarely rheumatoid granulomatosis and rheumatoid renal vasculitis), as well as iatrogenic, due to the treatment (medicinal tubulointerstitial nephritis, membranous nephropathy, mesangioproliferative glomerulonephritis). At the same time, in real clinical practice, the nosological diagnosis of kidney disease in RA is usually established when clinical and laboratory criteria appear, the most important of which is proteinuria , at the same time, it has recently been established that with a low-symptomatic course, renal dysfunction can develop without the presence of proteinuria. It is noteworthy that rheumatologists do not always pay attention to the early manifestations of functional renal disorders, especially with moderate severity of proteinuria, although the rate of decline in kidney function in RA can be quite fast, especially in old age and in association with cardiovascular pathology.

Keywords: rheumatoid arthritis, endothelial dysfunction, chronic kidney disease, growth factors

INTRODUCTION

The unfavorable prognostic significance of kidney damage in rheumatoid arthritis (RA) has been actively attracting the attention of researchers in recent years. Certain clinical variants of involvement of the kidneys in the pathological process in rheumatoid arthritis are noted in most patients. Various variants of kidney damage in rheumatoid arthritis are described, in particular, glomerulonephritis, amyloidosis, vasculitis, as well as iatrogenic forms (analgesic tubulopathy, membranous nephropathy, etc.). It is noteworthy that in real clinical conditions in such patients for a long time morphological verification of renal pathology may not be performed for a number of objective reasons. Early manifestations of functional renal disorders, especially with their moderate severity, do not always attract the attention of clinicians, while the progression of chronic kidney disease (CKD) in RA can be rapid, especially in old age, as well as in association with cardiovascular pathology.

According to some researchers, the development of CKD in RA may be associated with cardiovascular disease to a greater extent than with the activity of RA itself. It is noteworthy that the amount of data on factors contributing to the development of cardiovascular pathology, as well as various variants of nephropathies and chronic kidney disease in RA is insufficient, and the available information is scattered, somewhat contradictory. It is noteworthy that recently the world's leading experts have proposed to isolate RA in the elderly – with a debut over 60 years old (the so-called elderly-onset rheumatoid arthritis), and there is a tendency to increase the occurrence of this form. This variant of the disease has some differences from RA with a debut at a younger age (less high activity of arthritis, more frequent seronegativity, usually a more favorable course), at the same time, it should be noted that the features of the formation of cardiovascular and renal pathology in both early and late onset of RA continue to be studied.

The purpose of this study was a retrospective and simultaneous assessment of the main variants of renal pathology in an expanded cohort of patients with RA with an assessment of cardiovascular risk and determination of a number of pathogenetically significant biomarkers of inflammation and endothelial dysfunction.

The aim of the study was to assess the severity of functional renal disorders in RA with an analysis of the main risk factors.

MATERIALS AND METHODS OF RESEARCH

The present study included 117 patients with rheumatoid arthritis (20 men, 97 women), the average age in the total cohort was 52.1 ± 16.4 years. Demographic and clinical characteristics of patients are given in Table 1.

The diagnosis of RA was established on the basis of diagnostic criteria of the American College of Rheumatology. To assess the functional state of the kidneys in all patients, serum creatinine was determined, a general urine test was performed, and daily proteinuria was performed. The glomerular filtration rate (GFR) was calculated using the formula MDRD (Modification of Diet in Renal Disease Study). To assess the activity of RA, the DAS28 activity index (Disease Activity Score) was calculated. The clinical and radiological stage was determined by Steinbrocker, the presence of systemic manifestations was taken into account.

Patients were excluded from the study if there were data confirming the presence of infectious, oncological diseases, alcoholic liver damage, acute coronary pathology, allergic reactions, type 1 diabetes mellitus, heart failure of functional classes III-IV according to the NYHA classification.

Table 1. Demographic characteristics and activity of rheumatoid arthritis in patients included in the study (n = 117)

Characteristic	Meaning
Age	52,1±16,4
% of women	82,9
Duration of RA, years	9,9±6,2
Positivity by Rheumatoid factor, %	82,1
Positivity by ADC, %	88,6
Radiologically confirmed erosions, %	45,2
Methotrexate therapy at the time of inclusion in the study, %	85,3
Corticosteroid therapy at the time of inclusion in the study, %	48,9
NSAID therapy at the time of inclusion in the study, %	59,3
Pain, mm	6,4±2,5
Condition, mm	7,1±2,5
ESR mm/h	32,1±9,3
CRP, mg/l	22,4±8,7
DAS28	6,2±1,4

In the course of this work, we assessed the prevalence of the main nosologies characteristic of RA, and also carried out a detailed study of functional renal disorders in comparison with their most important possible causal factors. Particular attention was paid to clarifying the possible connection with the development of renal dysfunction of the traditional determinants of cardiovascular risk (age, hypertension, hypercholesterolemia), as well as those associated with RA itself (activity and length of disease, frequency of NSAIDs and corticosteroids), which, according to previous studies, may be important in the development of CKD in RA.

To determine the total cardiovascular risk, we used the SCORE scale, which determines the risk of cardiovascular complications based on the results of age, gender, cholesterol and blood pressure assessment. According to experts from the European Society of Cardiology, the SCORE scale most accurately determines the 10-year fatal risk of all complications associated with atherosclerosis (MI, cerebral stroke, peripheral artery damage). In this regard, for the total assessment of cardiovascular risk in RA patients included in our study, the SCORE scale was used in the modification of the experts of the European Anti-Rheumatic League – EULAR. In 23% of patients, according to these recommendations, we applied an increasing coefficient (multiplication by 1.5) due to the presence of two of the three criteria (duration of RA more than 10 years, antibodies to cyclic citrulline peptide, extraarticular manifestation of RA).

In some patients, the nosological diagnosis was established with indications for puncture nephrobiopsy (mainly in the presence of nephrotic syndrome), which corresponds to modern

diagnostic standards in nephrology, in the main category of patients, the nosological renal diagnosis was not verified, but functional disorders were present.

RESEARCH RESULTS AND THEIR DISCUSSION

Among the patients included in the study, chronic kidney disease was registered in 51 people. When comparing the frequency of CKD in different age groups by the onset of RA, its predominance was determined in the group with the onset of RA aged over 45 years (63%) in comparison with the group with the onset of RA less than 45 years (37%) (p = 0.03). Morphological variants of kidney damage in 21 patients with nephrobiopsy are presented in Table. 2. tubulointerstitial nephritis was the most frequently recorded (42.8%), amyloidosis (28.5%), various morphological forms of glomerulonephritis (28.7%) were less frequent.

Table 2 Morphological variants of kidney damage in rheumatoid arthritis according to light and immunofluorescence microscopy in 21 patients

Morphological variant of nephropathy	Patients n (%)
Tubulointerstitial nephritis	9(42,8%)
AA-amyloidosis	6(28,5%)
Mesangioproliferative glomerulonephritis	2(9,5%)
Membranous glomerulonephritis	3(14,2%)
Focal segmental glomerulosclerosis	1(5%)

Next, we analyzed possible statistical differences in the main risk factors for the development of CKD in RA, which were indicated in previous studies [4, 8, 12]. The results on the main risk factors obtained when ranking patients depending on the severity of GFR reduction (less than 90 ml/min and normal level) are presented in Table 3.

Table 3 Risk factors for the development of functional renal disorders in patients with RA included in the study

Sign	Indication of GFR < 90 ml/min (n = 51)	Normal GFR (n = 66)
Age (years)	66 (29; 69)*	54 (30; 64)
Duration of RA (years)	14 (5; 20)*	8 (8; 15)
Frequency of high RA activity (DAS28 > 3.2)	17(33%)	18(27,2%)
Frequency of administration of methotrexate, n (%)	46(90%)	58(88%)
The frequency of taking glucocorticoids, n (%)	22 (43%)	29(44%)
Frequency of NSAID intake, n (%)	39 (76%)	32(48%)
Frequency of use of genetically engineered biological drugs, n (%)	10(20%)	12(18%)
Frequency of arterial hypertension, n(%)	42(82%)	30(45%)
C-reactive protein, mg/l	14,1 (10,3; 19,2)*	17,2 (8,3; 21,5)
Body mass index, kg/m^2	31,6±6,1*	25,4±4,4
Total cardiovascular risk on the SCORE scale	7,5±0,9*	4,2±1,3
Total cholesterol, mmol/l	5,36±0,9	5,1±0,6
LDL cholesterol, mmol/l	3,2±0,4	2,9±0,3

When analyzing the significance of statistical differences between groups with normal and reduced GFR, the following data were obtained: the most significant factor in reducing GFR was a 10-year cardiovascular risk on the SCORE scale (p = 0.02), in addition, other significant factors included age, duration of RA, frequency of NSAIDs and hypertension, obesity. The incidence of CKD in patients with RA in combination with hypertension was 67%, and in the group with tubulointerstitial nephritis – 78%. Signs of RA activity, both clinical and laboratory, according to the data obtained by us, were not considered significant for the development of CKD, which does not coincide with the data of some researchers.

Thus, according to our data, in patients with RA with chronic kidney disease, the most significant factors directly related to the risk of CKD in RA were the SCORE index value, age, duration of RA history, frequency of NSAIDs and arterial hypertension.

LITERATURE

1. Khusainova, M. (2021). CHRONIC HEART FAILURE IN PATIENTS WITH EARLY RHEUMATOID ARTHRITIS. Journal of Cardiorespiratory Research, 2(4), 67-69.
2. Alisherovna, K. M., & Erkinovna, K. Z. (2022). Assessment of the Immune-Inflammatory Relationship in Patients with Chronic Heart Failure with Rheumatoid Arthritis. CENTRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES, 3(2), 373-377.
3. Shodikulova, G. Z., Pulatov, U. S., Ergashova, M. M., Tairova, Z. K., & Atoev, T. T. (2021). The Correlation among Osteoporosis, Calcium-Phosphore Metabolism and Clinical Symptoms of Main Disease in Patients with Rheumatoid Arthritis. Annals of the Romanian Society for Cell Biology, 4185-4190.
4. Zikriyaevna, S. G., & Muhtorovna, E. M. (2019). The features of the early diagnostics of osteoporosis in patients with rheumatoid arthritis. Достижения науки и образования, (12 (53)), 110-112.
5. SHODIKULOVA, G. The Z., ERGASHOVA, M. Location, KURBANOVA, Z. The P., & UMARAV, I. D. (2022). ASSESSMENT OF CARDIOVASCULAR RISK IN WOMEN WITH RHEUMATOID ARTHRITIS AND SECONDARY OSTEOARTHROSIS. JOURNAL BIOMEDICINE I PRAKTIKI, 7 (1).
6. Ergasheva, M. M., & Shodikulova, G. Z. (2021). RHEUMATOID ARTHRITIS VA IKKILAMCHI OSTEOARTROZ KASALLIGI BOR BEMORLARDA YURAK GEMODINAMIKASINING O'ZIGA XOS XUSUSIYATLARI. JOURNAL OF BIOMEDICINE AND PRACTICE, 6(1).
7. Nasirova, A., Kurbanova, Z., & Shonazarova, N. (2020). CLINICAL AND IMMUNOLOGICAL FEATURES OF THE COMBINATION OF BRONCHIAL ASTHMA AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE. Journal of Cardiorespiratory Research, 1(1), 81-84.
8. Akhmedov, I. A., & Taskinova, L. H. (2020). REVMATOID ARTRIT KASALLIGIDA BO 'G 'IM VA BRONXOPULMONAL O 'ZGARISHLARNI ERTA ANIQLASHDA MAGNIT REZONANS VA KOMPYUTER TOMOGRAFIYANING IMKONIYATLARI. Journal of Cardiorespiratory Research, 1(3).

9. Akhmedov, I. A., & Abdushukurova, K. R. (2020). REVMATOID ARTRIT VA YURAK ISHEMIK KASALLIGI BO 'LGAN BEMORLARDA ASPIRIN QO 'LLANILISHI. Journal of Cardiorespiratory Research, 1(3).
10. Ishankulova, N. N., Abdushukurova, K. R., Akhmedov, I. A., & Taskinova, L. H. (2019). Assessment of the quality of management of patients with arterial hypertension in a family polyclinic. Health, demography, ecology of the Finno-Ugric peoples. Health, demography, ecology, 429.
11. Shodikulova, G. Z., Samatov, D. K., & Tairova, Z. K. (2021). FEATURES OF THE CLINICAL COURSE AND DIAGNOSIS OF PATHOLOGIES OF THE UPPER GASTROINTESTINAL TRACT IN PATIENTS WITH CONNECTIVE TISSUE DYSPLASIA. JOURNAL OF BIOMEDICINE AND PRACTICE, 6(1).
12. Shodikulova, G. Z., Mukhitdinova, G. Z., & Atoev, T. T. (2021). ASSESSMENT OF THE STATE OF CENTRAL HEMODYNAMICS IN PATIENTS WITH CHRONIC KIDNEY DISEASES IN THE SAMARKAND REGION. Achievements of science and education, (8 (80)), 59-63.
13. Shodikulova, G. Z., Mirzaev, O. V., & Babamuradova, Z. B. (2020). Prevalence of clinical options of undifferentiated connective tissue dysplasia in uzbek population. In European Research: innovation in science, education and technology (pp. 90-92).
14. Shodikulova, G. Z., & Tashkenbaeva, EY N. (2012). State of endothelial function and protective effect of magnesium ions (Mg2) in patients with undifferentiated connective tissue dysplasia with congenital mitral valve prolapse. Bulletin of problems of biology and medicine, 2(2), 170-172.