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ASSESSMENT OF MUSCLE FORCES N IN THE PRESENCE OF OSTEOPOROSIS A AND SARCOPENIA IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Abstract:

Rheumatoid arthritis (RA) is a chronic systemic autoimmune disease that primarily affects the joints. Pathological changes in RA are mediated by cytokines, chemokines and metalloproteinases. Inflammation of symmetrical peripheral joints (e.g., wrist joints, metacarpophalangeal joints) is characteristic, leading to progressive destruction of joint structures; signs of systemic damage are also observed. Diagnosis is based on the analysis of specific clinical manifestations, the results of laboratory and radiological studies. Treatment with medications, physiotherapy, and in some cases - surgery. Basal anti-inflammatory drugs allow to control symptoms and slow down the progression of the disease. RA occurs in the population with a frequency of about 1%. The incidence among women is 2-3 times higher than among men. The disease can occur at any age, most commonly between the ages of 35 and 50, but it can also occur in childhood (see Juvenile Idiopathic Arthritis) and in the elderly.

Keywords: Rheumatoid arthritis, sarcopenia, SARC-F, osteoporosis, risk factors, muscle force

INTRODUCTION:

Rheumatoid arthritis (RA) is an autoimmune disease of unknown aetiology, accompanied by chronic erosive arthritis and systemic inflammation of internal organs. Globally, around 20 million people are diagnosed with RA, while the incidence rate of rheumatic diseases is about 10%, and among the general population is between 0.6 and 1.3%. Women are more likely to develop RA than men .The disease is accompanied by damage to the articular cartilage, polyarthritis of the erosive-destructive type of bones that form the joints, deformation and dysfunction of the joints. Symmetrical lesions of large and small joints, involvement in the inflammatory process of the lungs, heart, blood vessels, kidneys, skin, organs of vision, muscles, lymph nodes - are "visitor cards" of complications of the disease.There are also cases of RA that raise doubts, which can be considered a complication or concomitant disease. These include problems such as sarcopenia (SP) and osteoporosis (OP) as a disease of the joints, RA syndrome or complications that developed independently in RA.

For many years he studied OP camping in many different studies in RA. It is known that chronic inflammation in RA and prolonged intake of glucocorticoids (GC) lead to a decrease in bone mineral density. However, the role of RA in increasing the risk of developing independent osteoporotic fractures has also been proven. Despite many years of research, the incidence of AP in patients with RA in different studies varies greatly - from 11 to 59%, which may depend on the age, gender and research method of the studied groups.

Sarcopenia (SP) is a relatively "new" concept that was introduced into clinical practice in the last years of the last century. The frequency of SP in patients with RA ranges from 13.9 to 39.8 % according to different authors. Until 2018, the European Working Group on Sarcopenia in the Elderly used the EWGSOP (European Working Group on Sarcopenia in the Elderly) to determine the AP according to the recommended criteria. In 2019, these criteria were revised (EWGSOP2) and are currently used in clinical practice. Decreased muscle strength may indicate the presence of SP in patients. A reliable diagnosis of SP can be made only if the decrease in muscle mass is confirmed using

instrumental studies. It is also possible to perform OP diagnostics simultaneously with the criteria in the second updated case.

PURPOSE OF THE STUDY:

The aim of our study was an assessment of sarcopenia (SP) and osteoporosis (OP) in patients with RA.

MATERIAL AND METHODS:

To achieve the purpose, and our study was examined 117 patients with RA. All patients were hospitalized in the rheumatology department of the 1st Clinic of SamSMI. The diagnosis has been put based on criteria s classification and EULAR and the ACR. In the course of the study, 102 patients (87.2%) were females and 15 (12.8%) were men. The age of the examined patients ranged from 19 to 67 years, the average age - 42.4 ± 11.5 years. In the examined patients, the duration of the disease ranged from 1 year to 30 years, with an average duration of 9.3 ± 6.2 years.

Table 1.
Demographic characteristics

Variables	Values (Mean±SD)
Age (years)	42.4 ± 11.5
Duration of RA (years)	9.3 ± 6.2
Body mass index (BMI)	24,2 ± 4 , 8
HAQ,	1.48 ± 0.69
DAS28	4.8 ± 1.3
ESR, (mm/s)	17 [13; 26]
CRP (mg / l)	12.1 [3.0; 17.1]
GCC> 3 months , n (%)	40 (49.4)
"Genetically engineered drugs"., n (%)	1 (14.8)

Patients with diseases of the heart, kidneys, liver and circulatory system were not included in the study. During the general clinical examination, the complaints of the patients were assessed, as well as the history of life and illness, the general condition of the patients, joint oedema, pain, local hyperemia, the state of soft tissues and the duration of morning stiffness of the joints. From the first days of hospitalization, all patients underwent clinical, laboratory, instrumental, immunological, and muscle-functional examinations following the standard. Also, all patients completed the SARC-F questionnaire independently. The result of the SARC-F questionnaire was scored on a scale from 0 to 10, with 4 or higher being recognized as symptoms of SP. Muscle strength was assessed using a mechanical hand-held dynamometer. In dynamometer, hand low indicator 16 kg and standing without support on the chair e in muscle weakness evaluated as less than 5 times for 15 seconds. Functional disturbances evaluated Referring to HAQ (Health Assessment Questionnaire) index, and the activity of RA was determined according to DAS28.

RESULTS:

In the study, 80 patients (72.6%) were under 50 years of age. Disease activity was high in 40 (34.1%) patients, the average level had 70 (59.8%) patients. RA activity according to the DAS28 index corresponded to the period of remission only in 5 patients (4.2%). Taking GCS for more than 6 months was observed in 108 patients (49.4%). It was found that 1 (0.8%) patient received genetically engineered biological preparations (GIBP). According to the study SARC-F, in 84 (71.7%) patients has revealed sarcopenia. According to the results of comparative analysis of the patient 64 and diagnosed with sarcopenia (54.7%) and 53 (45.3%) without sarcopenia. The incidence of RA was higher in patients with SP than in patients without SP, and the body mass index (BMI) was significantly lower, and muscle strength was found to be low in line with these indicators. There was no association between the usage of corticosteroids and age as well as sex of patients.

Table 2.
Comparative characteristics of the patients in a joint venture and the joint venture without

Indicator	(+)SP (n=64)	(-)SP (n= 53)	P-value
Age, years, M ± SD	42.5 ± 6.9	59.1 ± 8.4	> 0.05
Age < 5 0 years, n, (%)	42 (65.6)	32 (53)	> 0.05
Duration of RA, years, Me	9.1 [1 ; 3 0]	6 [1; 15]	> 0.05
BMI, kg / m 2, Me	24.5 [22.4; 25.8]	27.7 [25.5; 32.4]	> 0.05
Falls over 1 year, n (%)	11 (17.1)	4 (7.5)	> 0.05
Repeated falls, n (%)	4 (6)	1 (1 , 8)	> 0.05

HA intake, n (%)	62 (96.8)	48 (90.5)	> 0.05
HAQ, M ± CO	1.50 ± 0.82	1.47 ± 0.67	> 0.05
DAS28, M ± CO	4.6 ± 1.6	4.8 ± 1.1	> 0.05
ESR, mm / h, Me	16 [15 ; 65]	18 [13; 31]	> 0.05

When assessing muscle strength in 95 (81.1%) patients, a dominant manual compression force of less than 16 kg was found. This method showed a high sensitivity (92%) to the SARC-F survey. Patients pain caused by movement of the joints during the test time, "Walking with the chair om ", gave a lower result than manual dynamometer, because patients there were some difficulties. The detection of OP was observed in almost all patients.

DISCUSSION:

In the research done by R. Krzimińska-Siemasco and co-authors, the sensitivity of the SARC-F study in the diagnosis of joint venture ranged from 35% to 95%. In the studies of YA Safonov and co-authors in patients with various injuries of the musculoskeletal system, the sensitivity and specificity of the SARC-F questionnaire was 41.7% and 68.5% [1,12].

This has been characterized by the use of different SP criteria or different instruments for determining muscle mass in previous studies in patients of different ages, and in some studies by gender. In our study, the incidence of SP in RA patients was 44.7%. We used the updated SP criteria, and our data were consistent with the results of other studies [2,11,12].

Some studies have shown that the joint venture is correlated was found with age and duration of disease in patients with RA, whereas in our study that the joint venture increasing with age and duration of disease. We also observed patients with SP, which coincides with the data of several authors [10].

However, in our study, as in other studies, no correlation was found between SP and levels of disease activity (DAS28, ECG, CRP). Both groups had the same number of patients, receiving the CC, therefore we did not observe significant differences in the dose receiving HA in patients with SP and its absence m [8.9].

In our study, OP was observed in almost all patients, and in patients combined with SP, the patient quality indicator showed very low HAQ results.

CONCLUSION:

Thus, SP and OP are the most common conditions in RA. In these patients, decreased muscle mass increases the risk of falls and bone fractures due to decreased muscle strength.When diagnosing SP and OP in the early stages of the disease in patients with RA in the primary health care system, the SARC-F questionnaire according to the EWGSOP2 criteria and the test "walking in a chair" and methods of arm dynamometry will be available. With these techniques in hand, dynamometry showed reliability in comparison with two other methods of assessing the level of the joint venture and muscle strength.

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