



Morphological Changes in the Thickness of the Intim-Media of The Carotid Arteries and the Diagnostic Value of Determining the Intim-Media Complex for Assessing Atherosclerotic Lesion in Patients with Rheumatoid Arthritis

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Abstract. Cardiovascular disease (CVD) is the leading cause of death worldwide. The risk of CVD in rheumatoid arthritis (RA) is an important issue in modern medicine. RA occupies one of the leading places among rheumatic diseases and belongs to diseases with high medical and social significance, due to the significant prevalence and progressive nature of the course, leading to early disability in patients of working age.

According to multicenter studies, cardiovascular morbidity and mortality in patients with rheumatoid arthritis is higher than in the general population. The direct cause of deaths in patients with RA are diseases associated with atherosclerotic vascular lesions, namely: coronary heart disease, acute cerebrovascular accident (ACV), congestive heart failure.

Keywords: rheumatoid arthritis, cardiovascular risk, atherosclerosis, TIM (thickness of intim media)

Rheumatoid arthritis (RA) occupies one of the leading places among rheumatic diseases and belongs to diseases with high medical and social significance due to the significant prevalence and progressive nature of the course, leading to early disability in patients of working age. According to multicenter studies, cardiovascular morbidity and mortality in patients with rheumatoid arthritis is higher than in the general population [1, 2]. The results of large multicenter studies suggest that the immunoinflammatory cascade in systemic connective tissue diseases contributes to the progression of the atherosclerotic process [3, 4]. This group of patients has a high level of cardiovascular morbidity. Assessment of traditional risk factors for cardiovascular diseases (CVD) does not reflect the actual prognosis in patients [5]. One of the main causes of lethality in RA is cardiovascular accidents (myocardial infarction (MI), stroke, sudden cardiac death) caused by early development and rapid



progression of atherosclerotic vascular lesions [6, 7]. These data are consistent with the results of a meta-analysis, which showed that in patients with early RA compared with controls, the intima-media thickness (IMT) and the frequency of atherosclerotic plaques of the carotid arteries are significantly higher, and high inflammatory activity makes a significant contribution to the increase in carotid IMT [8]. The solution to this problem involves assessing the prevalence of CVD, cardiovascular risk factors and metabolic disorders; as well as the selection of groups of patients predisposed to the development of cardiovascular complications (CVS) in order to carry out a set of preventive and therapeutic measures aimed at reducing cardiovascular risk [9, 10, 11].

PURPOSE OF THE STUDY

To evaluate the intima-media thickness (IMT) parameter of the carotid arteries as an early predictor of atherosclerosis in patients with rheumatoid arthritis (RA).

MATERIALS AND METHODS

In the department of rheumatology of the Bukhara Regional Multidisciplinary Medical Center in 2018, a prospective examination was 89 patients aged 35 to 60 years treated for rheumatoid arthritis. Genetic predisposition, lack of physical activity, obesity, hypercholesterolemia, and the presence or absence of smoking were identified. The diagnosis of rheumatoid arthritis was based on the ACR (1987) and ACR/EULAR (2010) criteria. When determining the frequency of cardiovascular risk factors in patients with rheumatoid arthritis, heredity, smoking, rheumatoid factor, hypercholesterolemia, abdominal obesity, C-reactive protein, as well as the frequency of arterial hypertension, coronary heart disease and diabetes were evaluated. The mSCORE scale (SCORE/EULAR) was used for early detection and prediction of cardiovascular risk. In these patients, Doppler ultrasonography was used to determine the thickness of the intima-media complex (IMC) in the carotid arteries as an early sign of the development of cardiovascular diseases.

RESULTS AND DISCUSSION

The results obtained when determining the thickness of the intima-media complex (IMC) of the common carotid artery in patients with RA were 0.98 ± 0.18 mm in the right carotid artery and 1.01 ± 0.18 mm in the left carotid artery. A pathological increase in this indicator (>0.9 (mm)) was detected in more than half of the patients in the study - 49 (55.1%) cases, and IMI was 1.13 ± 0.07 mm in the right carotid artery and $1, 16 \pm 0.07$ mm in the left carotid artery. IMT in patients with seronegative RA was 1.12 ± 0.07 mm in the right carotid artery, 1.15 ± 0.07 mm in the left carotid artery, in patients with seropositive RA 1.13 ± 0.07 mm in the right carotid artery , 1.17 ± 0.06 mm in the left carotid artery. Analysis of this indicator based on the age of the patients showed that the mean value (mm) of IMC was 0.82 ± 0.12 mm in the right carotid artery, 0.84 ± 0.12 mm in the left carotid artery in the group of patients aged 35 -49 years old and in the age group of patients 50–60 years old, this indicator was 1.06 ± 0.14 mm in the right carotid artery and 1.08 ± 0.15 mm in the left carotid artery (Table 1). The analysis showed that the IMT thickness directly correlated with the age of patients ($r = 0.64$), an increase in IMT >



0.9 mm was observed in 46 (74.2%) patients aged 50–60 years, in the right carotid artery 1.13 ± 0.07 mm, in the left carotid artery 1.16 ± 0.07 mm

Table 1

Diagnosis of atherosclerosis in patients with RA

Indicators	Number of patients	35-49 years old	50-60 years old
n (%)	89	27(30,3%)	62(69,7 %)
Average age	51,5±7,12	42,2± 4,4	55,5±3,15
CIM (mm.)			
Right carotid artery	0,98±0,18	0,82±0,12	1,06±0,14
Left carotid artery	1,01±0,18	0,84±0,12	1,08±0,15
TIM ≤ 0,9 (mm.) n (%)	40(44,9%)	24(88,9%)	16(25,8%)
Right carotid artery	0,81±0,08	0,79±0,08	0,84±0,06
Left carotid artery	0,82±0,06	0,81±0,07	0,84±0,05
TIM > 0,9 (mm.) n (%)	49(55,1%)	3(11,1%)	46(74,2%)
Right carotid artery	1,13±0,07	1,07±0,06	1,13±0,07
Left carotid artery	1,16±0,07	1,13±0,06	1,16±0,07

An analysis of the association of IMI with CV risk factors in RA patients showed that in 26.5% of patients with risk factor 1, IMI was >0.9 mm higher, and in patients with risk factors 2 and 3, 28.6 and 42.9%, respectively (Table 2).

Table 2

The occurrence of CIM indicators with factors risk in patients with RA

Indicators	Number of patients (n=89)	CIM ≤ 0,9(mm.) (n=40)	CIM >0,9(mm.) (n=49)
no risk factor	11 (12,4%)	10(25%)	1(2 %)
1 risk factor	27 (30,3%)	14(35%)	13(26,5%)
2 risk factors	20 (22,5%)	6(15%)	14(28,6%)
≥3 risk factors	31 (34,8%)	10(25%)	21(42,9%)

Assessment of carotid IMT in patients with RA based on the levels of cardiovascular risk determined by the mSCORE scale showed that a pathological increase in IMT in patients in the medium and high risk groups was detected in 67.3% and 14.3% of cases. In patients at very high risk, IMT values greater than >0.9 mm were observed in all patients and were 1.19 ± 0.06 in the left carotid artery, 1.16 ± 0.05 mm in the right carotid artery.

Thus, in patients with RA, a pathological increase in IMT (> 0.9 mm) was observed in 55.1% of patients, and it had a correct correlation with the age of patients ($r = 0.64$), at the age of 50–60 years it



was observed in 74.2% of patients and was 1.13 ± 0.07 mm in the right carotid artery and 1.16 ± 0.07 mm in the left carotid artery. The IMC index is also associated with the risk of CVD, determined by the mSCORE scale: the index was found to be higher than > 0.9 mm in 67.3% in the medium groups. The parameters of IMC of the common carotid artery in patients with RA are associated with the age of patients, the number of RF encounters, disease activity, and are of great prognostic value in the early detection of cardiovascular risk.

CONCLUSION

The definition of IMT is of diagnostic value for assessing the features of remodeling and atherosclerotic vascular lesions and of practical importance as a predictor of vascular accidents in patients with RA.

References:

1. Agca R., Heslinga S.C., Rollefstad S. (2017) EULAR recommendations for cardiovascular disease risk management in patients with rheumatoid arthritis and other forms of inflammatory joint disorders: 2015/2016 update. *Ann Rheum Dis.*, 76 (1), pp. 17–28.
2. Piepoli M.F, Hoes A.W, Agewall S, Albus C, Brotons C. (2016) 2016 European Guidelines on cardiovascular disease prevention in clinical practice: The Sixth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of 10 societies and by invited experts). *Europ Heart J*, 37(29), pp. 2315–2381.
3. Arida A., Protogerou A.D., Kitis G.D., Sfikakis P.P. (2018) Systemic Inflammatory Response and Atherosclerosis: The Paradigm of Chronic Inflammatory Rheumatic Diseases. *Int J Mol Sci.*, 19 (7), p. 1890.
4. Francula-Zaninovic S., Nola I.A. (2018) Management of Measurable Variable Cardiovascular Disease Risk Factors. *Curr Cardiol Rev.*, 14 (3), pp. 153–163.
5. Cooney M.T, Vartiainen E, Laatikainen T, De Bacquer D, McGorrian C.(2012) Cardiovascular risk age: concepts and practicalities. *Heart*, 98, pp. 941–946.
6. England B.R., Thiele G.M., Anderson D.R., Mikuls T.R. (2018) Increased cardiovascular risk in rheumatoid arthritis: mechanisms and implications. *BMJ*, 23, p. 361.
7. Berger J.S., Jordan C.O., Lloyd-Jones D., Blumenthal R.S.(2010) Screening for Cardiovascular Risk in Asymptomatic Patients *J Am Coll Cardiol*, 55, pp. 1169–77.
8. Karmali K.N., Persell S.D., Perel P. (2017) Risk scoring for the primary prevention of cardiovascular disease. *Cochrane Database of Systematic Reviews*, issue 3. Art. No.: CD00688.
9. Saidova M.M., Kamilova U.K. MSCORE CARDIOVASCULAR RISK IN PATIENTS WITH RHEUMATOID ARTHRITIS. 2019. №S1. URL: <https://cyberleninka.ru/article/n/serdechno-sosudisty-risk-po-shkale-mscore-u-bolnyh-revmatoidnym-artritom> (Date of access: 07/05/2022).
10. Saidova M., Kamilova U. Cardiovascular Risk Assessment in Patients with Rheumatoid Arthritis



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11. Saidova M. M. EVALUATION OF THE CAROTID ARTERIES INTIMA-MEDIA THICKNESS AS AN EARLY PREDICTOR OF THE DEVELOPMENT OF ATHEROSCLEROSIS IN PATIENTS WITH RHEUMATOID ARTHRITIS // Journal of Cardiorespiratory Research. - 2022. - Vol. 3. - No. 1.

