

**CARDIAC ARRHYTHMIAS IN PATIENTS WITH RHEUMATOID ARTHRITIS**

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Abstract

70 patients (82% of women) with an established reliable diagnosis of rheumatoid arthritis (RA) according to the criteria of the ARA were examined, the average age was 46.9 ± 1.2 years. Along with general clinical methods for all patients A 2-echocardiogram study and daily monitoring of the Holter ECG (HM) were performed. 68.6% have a seropositive variant of RA. According to 2DECHOCG, pericardial damage was detected in 12.9%, and endocardial damage to the heart valves was detected in 32.8% of patients. After Holter monitoring, the presence of ventricular extrasystoles (VES) of high gradations was revealed in 65.7% of cases, among which paired VES occurred in 48.6%, episodes of unstable tachycardia – in 5.7% and early "R on T" – in 11.4% of patients. At the same time, there were no clinical signs of angina pectoris and/or episodes of pain-free myocardial ischemia. A clear trend has been demonstrated in the increase in the number of ventricular arrhythmias of high gradations in combination with damage to the endocardium of the heart valves and/or pericardium with an increase in RA activity, which illustrates the inflammatory nature of heart damage and reflects the subclinical course of rheumatoid carditis. The results obtained demonstrate polymorphism of clinical and instrumental signs of rheumatoid heart disease, which significantly complicates its timely diagnosis.

Keywords: rheumatoid arthritis, heart, arrhythmias, inflammation.

Introduction

The prognosis and mortality rates for rheumatoid arthritis (RA) are comparable to those for lymphogranulomatosis, diabetes mellitus, and severe forms of coronary heart disease. Damage to the cardiovascular system is usually considered as an extra-articular manifestation of RA. Nevertheless, cardiac pathology in patients with RA is often not diagnosed, receding into the background compared to severe joint syndrome. However, according to recent studies, there has been a significant increase in total mortality and mortality from cardiovascular diseases in RA patients compared to the general population. Currently, much attention is paid in domestic and foreign literature to the accelerated progression of atherosclerosis in RA patients, which is associated with a chronic autoimmune process underlying the pathogenesis of both diseases and leading to endothelial dysfunction. In this regard, a number of authors indicate that RA may be a risk factor for the premature development of such manifestations of atherosclerosis as coronary heart disease, as evidenced by It serves to increase mortality rates from acute myocardial infarction in groups of RA patients in comparison with the general population. Often, the clinical manifestations of heart damage are masked by bright articular pain syndrome and limited motor



activity of patients, and therefore their identification is required. The greatest difficulties in the clinical interpretation of the nature of the pathological process arise in relation to RA patients with clinical signs of lesion myocardial infarction, which in 50-67% of patients is regarded by clinicians as myocardiodystrophy and much less often (in 3.6–9.4%) as rheumatoid myocarditis, amyloidosis or coronariitis. It is believed that any clinical and electrocardiographic signs of heart muscle damage in RA and other collagenoses are considered exclusively as manifestations of myocarditis. This position is also supported by the results of morphological studies. T.N. Kopyeva found on autopsy focal, diffuse myocarditis and cardiosclerosis as an outcome of rheumatoid myocarditis in 28 (73%) of 38 RA patients. With the exception of rare cases when granulomas are found, rheumatoid myocarditis is nonspecific and histological examination reveals foci of infiltration of the heart muscle by lymphocytes, histiocytes and plasma cells. Foci of nonspecific inflammatory infiltration are located in the subendocardial and subepicardial layers of the myocardium, as well as near the mitral valve. Granulomas in the heart muscle can be detected only in isolated cases, while granulomatous myocarditis is usually combined with focal nonspecific interstitial myocarditis or foci of myocardial fibrosis. The most serious myocardial lesion is observed in a severe and rapidly progressive variant of RA, when a diffuse one is found on autopsy interstitial myocarditis, often histologically manifested by necrotic degeneration of muscle fibers. Numerous clinical and anatomical comparisons have shown that focal myocarditis in the vast majority of patients is almost asymptomatic, not it leads to the development of congestive heart failure and is often an accidental finding at an autopsy. Coronariitis, like other manifestations of rheumatoid carditis, is mainly described by pathologists. The outcome of rheumatoid coronariitis may be sclerosis of the coronary arteries, narrowing of their lumen. In the vast majority of cases, rheumatoid coronariitis is asymptomatic. The differential diagnosis between coronariitis and coronary heart disease remains difficult, since modern instrumental studies do not always allow us to answer this question. It is assumed that the total forms of rheumatoid coronariitis may be manifested by myocardial infarction. One of the clinical manifestations of rheumatoid coronariitis and myocarditis may be various rhythm and conduction disorders. Their cause is explained by lymphohistiocytic infiltration of the Gis system and localization of rheumatoid granulomas in the conduction system of the heart. At the same time, the frequency, nature and pathogenesis of rhythm disturbances in rheumatoid heart disease have not been fully studied.

MATERIALS AND METHODS OF RESEARCH

70 patients (82% women, 18% men) with a reliable diagnosis of RA according to the criteria of the ARA were examined. The average age of the patients was 46.9 ± 1.2 years. At the time of examination, 68.6% of patients had a seropositive variant of RA, 80% of patients had extra-articular manifestations. Radiological changes and the severity of functional insufficiency of the joints corresponded to the duration of the disease. Along with general clinical methods, all patients underwent 2 echocardiography studies and daily monitoring of the Holter ECG.

THE RESULTS AND THEIR DISCUSSION

When registering a resting ECG, cardiac arrhythmias were detected in the form of a single ventricular extrasystole (IE) in 12.6%, single atrial extrasystoles were recorded in 17.1% of patients. Conduction disturbances in the form of incomplete blockade of the right or left leg of the Gis bundle were noted in 5.7% and 2.9% of patients, respectively. With an increase in RA activity,



there is a significant increase in signs such as tachycardia (from 11% with a minimum degree of RA activity to 22% with a high degree of activity, respectively). A similar trend was noted in the analysis of such an indicator as bradycardia (2.3 and 11.1% with medium and high activity, respectively) and especially ventricular extrasystole, which was not noted at all in the group of patients with minimal RA activity, and with medium and high activity, respectively, was observed in 11.6 and 44.4% of patients ($p < 0.05$). Nonspecific myocardial changes in the form of inversion of the T wave in the thoracic leads occurred in 8.6% of patients. Scarring of the myocardium and ST segment changes were not detected in any the case. We did not observe signs of ischemic changes in the resting ECG in the form of ST segment depression in any RA patient. When analyzing the results of daily ECG monitoring, not a single episode of pain-free myocardial ischemia was detected in any RA patients of different genders, ages and with different process activity, which, combined with the absence of documented episodes of angina pectoris, as well as significant risk factors for coronary heart disease indicate that they do not have clinical manifestations of coronary atherosclerosis. There were no cases of episodes of flickering, including paroxysmal, persistent and permanent (ACC/AAC/EOC, 2001) forms in patients with RA. Supraventricular arrhythmias in the form of supraventricular extrasystole were detected in 47.1% of RA patients. More often than other cardiac arrhythmias in our study. During daily ECG monitoring, ventricular extrasystoles were diagnosed in 65.7% of RA patients. Among ventricular arrhythmias, high-grade extrasystole, such as paired RE, was detected in 48.6%, episodes of unstable ventricular tachycardia (LVT) – in 5.7% and early "R on T" RE - in 11.4% of patients. The tendency of significantly more frequent detection of cardiac arrhythmias in RA was also noted by us when analyzing the frequency of detection of such arrhythmias of high gradations, both group RE and early RE of the "R on T" type and paroxysms of unstable ventricular tachycardia. In 19.0% of patients in this group, we noted a combination of these rhythm disturbances. There was a clear tendency for the number of ventricular arrhythmias to increase with an increase in RA activity, especially with regard to ventricular extrasystoles of the "R on T" type. Thus, in patients with a high degree of activity, compared with patients with a minimal degree, twice as many paired RE were registered; early RE types "R on T" were detected only at medium and high degrees activity, and with minimal activity, they were not registered at all. In our study, patients with systemic manifestations of the disease also showed a tendency to increase RE, including high gradations, although significantly insignificant. At the same time, data were obtained on a significant increase in the number of ventricular arrhythmias, including high gradations, in patients with seropositive RA in contrast to the seronegative variant of the disease ($p < 0.05$). This is probably due to active inflammatory processes in the myocardium in this category of patients. There were no significant differences in the frequency of detection and the number of RE per hour, depending on the gender of RA patients. It is known that with increasing age of patients, the causes for electrical instability of the myocardium become greater, but in our study there was no tendency to increase the frequency of detection and the number of arrhythmias per hour with increasing age of patients and duration of RA. There was also no significant change in the number of extrasystoles depending on the radiological stage of RA. In our work, we observed the development of pericarditis without any clinical manifestations, 9 (12.9%) patients with RA, of whom 7 patients had exudative pericarditis according to EchoCG data; at the same time, the amount of effusion in all patients was small and did not cause any hemodynamic disorders. In 2 patients with RA, only thickening of the pericardial leaflets to 6.5 mm was noted. In 5 patients of this group, RA was



seropositive, in 4 – seronegative. In the clinical picture of RA in all patients, along with involvement in the pericardium process, other extra-articular manifestations were revealed: weight loss (22.2%), fever to subfebrile figures in the afternoon (44.4%), anemia syndrome (44.4%). During echocardiography, the involvement of the valvular endocardium in the pathological process was revealed. It was manifested by diffuse thickening, uneven surface of the valve flaps and multi-contour images. At the same time, the valves of the mitral valve were changed in 18 (25.7%) patients, and the mitral and aortic valves in 5 (7.1%) patients.

CONCLUSION

Simultaneous detection of ventricular extrasystoles of high gradations in combination with pericarditis was noted by us in 10% of the RA patients examined, which may indicate current myopericarditis in patients of this subgroup. In another 15.7% of patients, marked rhythm disturbances (high-grade FE) were combined with signs such as damage to the endocardium of the valves, high activity of the disease, which may also indicate heart damage in RA of an inflammatory nature. Since patients of this subgroup have signs of chronic heart failure and cardiomegaly have not been diagnosed, we assume that cardiac arrhythmias can be considered within the framework of the current focal myocarditis. Thus, in 25.7% of RA patients, cardiac arrhythmias were accompanied by involvement of the endocardium and/or pericardium in the process, which may indicate subclinically ongoing rheumatoid carditis.

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