

Heart Lesions in Rheumatological Diseases

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Abstract

The study presents the results of a comparative echodopplercardiographic study of heart lesions in rheumatological diseases (rheumatoid arthritis, systemic lupus erythematosus, chronic rheumatic heart disease, systemic scleroderma and chronic spondylitis). It is shown that the frequency of heart and pericardial valve damage depends on the type of disease, which must be taken into account when ultrasound examination of the heart of patients with rheumatological diseases. Rheumatic heart disease is a disease that affects the heart valves or forms a heart defect. As a result, there is heart failure, stenosis, heart rhythm disorder and other negative pathologies. It is well known that patients with rheumatological diseases (RH) — such as systemic lupus erythematosus (SLE), systemic scleroderma (SSD), ankylosing spondylitis (AS), rheumatoid arthritis (RA), are characterized by a significantly higher level of cardiovascular morbidity and mortality compared to the indicators in the general population. It has been shown that patients with RS are characterized by a faster progression of the atherosclerotic process and a high incidence of thrombosis, which cannot be fully explained by the influence of traditional factors risk of cardiovascular pathology. Therefore, a number of authors have suggested the role of inflammation as a link between RH and atherosclerosis, damage to target organs, where inflammatory mediators and pro-inflammatory cytokines act as intermediaries. At the same time, the profile of inflammatory markers differs depending on the type of RH, which may manifest itself in the features of target organ damage, however, this assumption has not been practically investigated before.

Keywords: echodopplercardiography, rheumatoid arthritis, systemic lupus erythematosus, chronic rheumatic heart disease, systemic scleroderma, chronic spondylitis

Introduction

It is known that in various rheumatological diseases, heart lesions are asymptomatic for a long time and are detected only during ultrasound examinations. At the same time, the frequency of such damage can reach from 40% to 60%. At the same time, we have not found any studies in the literature in which a comparative study of heart lesions depending on the nosology of rheumatological disease would be carried out.

The purpose of the study: to study on the basis of a comparative analysis of echo-, dopplercardiographic studies of heart lesions in various rheumatological diseases (rheumatoid arthritis, systemic lupus erythematosus, chronic rheumatic heart disease, systemic scleroderma and chronic spondylitis).

Material and methods of research

Research material: 331 patients with various rheumatological diseases who underwent inpatient treatment in the rheumatology department of the 1st SAMMU clinic were examined from 2011 to On 2014, the patients were divided into the following groups depending on the nosological unit:

- Group 1 (n=122) - patients with rheumatoid arthritis (RA), mean age 50.8 ± 13.8 years, of which 18 men, 101 women;
- Group 2 (n=67) - patients with systemic lupus erythematosus (SLE), mean age 34.3 ± 11.5 years, of which 6 men, 61 women;
- Group 3 (n=50) - patients with chronic rheumatic heart disease (CRD), average age of 45.2 ± 14.7 years, of which 8 men, 42 women;
- Group 4 (n=41) - patients with chronic spondylitis (CS), mean age 36.3 ± 15.1 years, of which 25 men, 16 women;

- Group 5 (n=33) - patients with systemic scleroderma (SSD), average age 45.26 ± 11.27 years, of which 2 men, 31 women.

Research methods:

Echodopplercardiographic examination was carried out according to the standard procedure on the PHILIPS Ultrasound MOD iE33 device by ultrasound diagnostics specialists 1-SamMU clinic.

The following indicators were analyzed:

- anteroposterior size of the left atrium, see
- end-diastolic size of the left ventricle, see
- end-systolic dimensions of the left ventricle, see
- The pancreas is the right ventricle, see
- thickness of the anterior wall of the right ventricle, see
- thickness of the posterior wall of the left ventricle, see
- is the thickness of the interventricular septum, see
- is the ejection fraction of the left ventricle, %.
- Systolic FRET – systolic pressure in the pulmonary artery, mmHg. art
- Average FRET – average pressure in the pulmonary artery, mmHg. art.

The presence of thickening of the flaps of the aortic, mitral, tricuspid valves was assessed. The criterion for thickening of the valves of the heart valves was considered to be the thickness of the valves > 5 mm. The sign of pericarditis was an echonegative space > 5 mm in the systole. The sealing of valve flaps and pericardial leaves was evaluated by the intensity of ultrasonic reflection.

Computer statistical processing of the obtained data was carried out using the STATISTICA "StatSoft 7" program and a package of standard statistical programs.

Results

The analysis of echodopplercardiographic studies showed that the most common lesions of the aortic valve (AV) in the form of focal compaction (FC) and minimal aortic regurgitation (AR) were noted in patients with systemic lupus erythematosus (in 64.2% of cases of FC and in 43.3% of cases of AR) and chronic rheumatic heart disease (in 58.0% of cases of FC and in 60.0% of AR cases). In patients with rheumatoid arthritis, chronic spondylitis and systemic scleroderma, changes in the aortic valve were detected with approximately the same frequency.

Mitral valve lesion, according to echodopplercardiographic studies, was most often detected in CRBS (96%), less in SLE (37.3%) and DM (42.4%) and less in patients with RA (47.2%) and CS (26.8%). Mitral regurgitation without structural changes on the part of the valve was detected in about half of the examined groups (with RA – 54.1%, SLE – 47.8%, HC – 53.7%, SSD – 51.5%), except for HRBS (0%). It is interesting to note that minimal tricuspid regurgitation without structural changes on the part of the flaps was recorded with high frequency in all the examined groups . Pericardial lesions were most often found in patients with SLE (56.7%) and less often in patients with CHF (4.9%).

Foci of calcification on the aortic and mitral valves of the heart were detected only in CRBS (in 21% of cases) and RA (in 8.2% of cases). Note also that according to our data, when SLE and RA are more often affected by the aortic valve (in 64.2% of cases with SLE and in 37.7% of cases with RA, respectively), less often the mitral valve (in 37.3% of cases with SLE and in 17.2% of cases with RA, respectively). With CRBS, the mitral valve often suffers (in 96% of cases), less often the aortic valve (in 60% of cases). With HC and DM , they are approximately equally often involved in inflammatory the process is mitral (in 26.8% of cases with CS and in 42.4% of cases with DM) and aortic (in 31.7% of cases with CS and in 42.4% of cases with SSD) heart valves.

Quantitative echocardiographic indicators in patients with CRBS were on average significantly higher than in other rheumatological diseases, with the exception of the left ventricular ejection fraction. Among other connective tissue diseases, these parameters did not differ significantly and were within the age norm.

Discussion

According to the literature, patients with RA often (up to 60%) have aortic and mitral regurgitation of varying degrees, with the presence in half of them of structural changes in the valvular apparatus of the heart in the form of marginal thickening of the valves or individual foci of compaction, accompanied by diastolic dysfunction of the myocardium of the ventricles of the heart. In our study, 8.2% of patients were found to have foci of calcification on the valve flaps. Since the age of RA patients in our material was on average more 50 years and significantly more than in other groups, probably in certain cases it is impossible to exclude the atherosclerotic genesis of these changes.

It is believed that when detecting structural changes on the part of the valvular apparatus of the heart in patients with RA, it is necessary to carry out a differential diagnosis between rheumatic, atherosclerotic damage to the heart valves and damage caused by rheumatoid genesis proper. This can be done only if all clinical and echodopplercardiographic data are taken into account, as well as with long-term monitoring of patients. Lesions of the heart valves in SLE are recorded on average in more than 50% of patients. At the same time, it is manifested by thickening of the heart valves, often in combination with vegetations and valvular regurgitation. The presence of valvular lesions according to echocardiography does not correlate with the duration, activity or severity of SLE and its treatment. Heart damage in SSD is also often found with the involvement of the pericardium, myocardium and the conduction system. The mechanism of cardiac damage is associated with disorders microcirculation, with pathological vasoreactivity and structural changes, myocardial fibrosis and pericarditis. Changes in the pericardium are usually asymptomatic, conduction disturbances are not serious, changes in the valves are insignificant, moderate pulmonary arterial hypertension often develops. According to the literature, heart lesions in CHF are characterized by frequent (44.5%) involvement of the aorta in combination with thickening of the aortic and mitral heart valves.

Conclusion

According to our data, a comparative echodopplercardiographic study of rheumatological patients, depending on the nosology, the aortic valve is affected (64.2% and 37.7%), less often the mitral valve (37.3% and 17.2%);

- with HRBS, the mitral valve is more often affected (96%), less often the aortic valve (60%);
- in CS and SSD, the mitral (26.8% and 42.4%) and aortic (31.7% and 42.4%) heart valves are affected approximately equally often;
- in all groups, a high frequency of tricuspid (from 75.6% to 98.5%) and mitral (from 47.8 to 54.1%) regurgitation without structural changes was found;
- foci of calcification on the aortic and mitral valves of the heart were detected only in RA (8.2%);
- pericardial lesions were most often found in patients with SLE (56.7%) and less often in patients with CS (4.9%).

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