

RESEARCH OF LOCAL CONTRACTABILITY OF THE MYOCARDIAL WITH THE HELP OF TISSUE DOPPLER STREETS SUFFERING WITH DILATED CARDIOMYOPATHY

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ANNOTATION

Currently, tissue Doppler echocardiography with the assessment of regional myocardial velocity is the most important type of echocardiographic examination in the world. The modern modes of study of local myocardial deformation include "strain" and "strainrate". This allows the most accurate assessment of the global systolic and diastolic functions of the ventricles, in particular in persons suffering from dilated cardiomyopathy (DCM).

Keywords: dilated cardiomyopathy, local contractility of the myocardium, local myocardial deformation include "strain" and "strainrate".

PURPOSE OF THE STUDY

To study the local contractility of the myocardium in persons suffering from dilated cardiomyopathy using tissue Doppler ultrasonography. In addition, to determine the changes in tissue Doppler ultrasound, which characterize the dyssynergia of the left ventricular myocardium.

MATERIALS AND RESEARCH METHODS

We examined 23 patients with DCM at the age from 47 to 68 years. Of these, 12 are men and 11 are women. The control group consisted of 10 practically healthy individuals (3rd year students of SamMI). Post-alcoholic DCM was detected in 5 patients; developed as a result of rheumatic heart defects - in 7 patients, after myocardial infarction - in 8 patients, progressed against the background of thyrotoxicosis - in 3 patients, and in one case idiopathic DCM was diagnosed. Along with general clinical research methods such as general blood and urine analysis, prothrombin index, prothrombin time, biochemical blood test, blood plasma natriuretic peptide, etc., all patients underwent an echocardiographic (EchoCG) study with the inclusion of tissue Doppler sonography. With the help of tissue Doppler sonography, peak myocardial velocities were investigated: Sm (cm / s) - peak systolic velocity; Em (cm / s) - peak velocity of early diastolic relaxation; Am (cm / s) - peak velocity in the phase of atrial systole. Time intervals: systolic (TRS; from the apex of the R wave on the ECG to the apex of the Sm peak) and diastolic (TRE; from the apex of the R wave on the ECG to the apex of the Em peak). Amplitude of myocardial systolic displacement (INT). Peak rate and amplitude of systolic strain: SR (strainrate) and ST (strain).

The movement of longitudinal myocardial fibers in projections along the long axis of the left ventricle from the apical approach was studied. Tissue Doppler sonography was performed in 4-, 3- and 2-chamber projections in each of the 16 segments of the left ventricle. Segments of patients with DCM were divided into 3 subgroups according to the results of two-dimensional echocardiography: normokinetic (n = 184), hypokinetic (n = 121), and akinetic (n = 104). Dyskinetic segments were excluded from the analysis due to their small number (n = 4). The following parameters were evaluated.

The amplitude of the postsystolic peak of velocity recorded during the phase of isovolumic relaxation (Sps). The velocity ratio Sps / Sm was calculated.

RESEARCH RESULTS

In the subgroups of segments with impaired local contractility, a significant decrease in myocardial velocities was revealed both in systole (Sm) and in early and late diastole (Em and Am). Along with a decrease in velocities in these zones, there was a decrease in the amplitude of systolic displacement (INT), as well as in the velocity and amplitude of systolic deformity (SR and ST). In the subgroup of segments where there was no systolic increase (akinesia), the values of velocity and linear parameters of tissue

Doppler sonography were significantly lower than in the subgroup with a moderate decrease in contractility (hypokinesia). In the study of LV systolic function in all patients, a decrease in EF was revealed in varying degrees of severity. In 14 patients it was <43%, in 5 - less than 32%, and in 4 patients EF was reduced to 23%. All studied patients showed signs of impaired local contractility of the heart walls in varying degrees of severity.

It should be noted that in the subgroup of visually intact segments in patients with postinfarction cardiosclerosis, a small but significant decrease in the indicated parameters of tissue Doppler ultrasonography was also revealed in comparison with the control group.

The time intervals TRS and TRE in the hypo- and akinetic segments were increased compared to the segments of the control group. Such a "lag" in systole and early diastole was also noted in most normokinetic segments in patients with postinfarction cardiosclerosis: the TRS and TRE intervals in this subgroup were also significantly increased compared to those in the group of healthy individuals (163 ± 55 and 144 ± 50 ms, respectively, 520 ± 92 and 503 ± 45 ms, respectively).

There were small differences between the segments with hypokinesia and akinesia as measured by tissue Doppler ultrasonography. They differed only in the values of Sm , Em , and INT.

CONCLUSIONS

Tissue Doppler ultrasonography has a high sensitivity in detecting violations of local contractility. One of the specific signs of impaired contractile function is PSU, recorded by tissue Doppler ultrasonography.

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