Mitral Valve Prolapse Syndrome and Arrhythmias

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SUMMARY

The retrospective study included 64 patients, 26 men and 36 women, 25 to 50 years of age. Patients were monitored at the Lukavac Health Center Cardiology outpatient department from January 2007 to December 2009 and were subdivided into three groups. First group included patients who had subjective symptoms and had MVP and rarely arrhythmias, in the second and third group were patients who had subjective symptoms and clear clinical and diagnostic findings that indicate the MVP and arrhythmias. We took patients anamnesis, completed a clinical examination, electrocardiography, ergometry, Holter monitoring, Doppler echocardiography, LP, QTd and HRV. Using statistical methods we found that a group of risk factors obtained by a combination of direct and indirect noninvasive methods best predicts the emergence of complex arrhythmias, with a sensitivity of 92%. We also found that a group of risk factors obtained only by direct methods has a high value in forecasting the occurrence of complex arrhythmias in patients with MVP with a sensitivity of 88.3 %. We have not demonstrated the ability to predict the type of arrhythmic disorder. There is a significant direct correlation between the risk factors and the clinical, morphologic and hemodynamic features of mitral complex. All given results can help in clinical assessment and identifying high-risk group of patients with MVP for the occurrence of complex ventricular arrhythmias and sudden cardiac death. **Key words: mitral valve prolapse syndrome, arrhythmias.**

1. INTRODUCTION

Mitral valve prolapse (MVP) is a phenomenon characterized by the displacement of an abnormally thickened mitral valve leaflet into the left atrium during systole, often accompanied by mitral regurgitation. “Functional” MVP is due to mismatch between the length of the valve and the hordein in the relation to the cavity in the left ventricle (LV), which causes a relatively lavish but morphologically normal valve. MVP can be found in Marfan syndrome, Ehlers-Danlos syndrome I, II and III, osteogenesis imperfecta, pseudoxanthoma elasticum, periarthritis thyroid, muscular dystrophy etc. It is equally represented in both men and women (1, 2, 3, 4, 5).

In patients with symptoms there are frequent changes in the ST-connectors, various arrhythmias and conduction disorders. The most common arrhythmias were ventricular extrasystoles, sinus tachycardia, paroxysmal supraventricular and ventricular tachycardia. Bradiarritmia and different degrees of AV block are also described. MVP should be considered in patients with obscure arrhythmias. In the general population MVP occurs in 2-4% with relatively frequent arrhythmic complications, among which the most serious is sudden cardiac death, although it is rare (0.5-2%). Special interest in this syndrome is caused by its prevalence, unclear etiology, a variety of clinical picture, ECG and phonocardiogram with the possibility of echocardiographic diagnosis.

1. AIM OF THE STUDY

The aims of this study were to identify the prognostic value of a group of risk factors that were obtained by combining indirect (medical hystory, clinical examination, ECG, stress testing, Holter ECG, Doppler ultrasound) and direct (late potentials –LP, heart rate variability – HRV, QT dispersion-QTD) non-invasive methods in assessment of possible complex arrhythmia events in subjects with MVP.

2. MATERIALS AND METHODS

There were 64 patients examined in the 2007-2009 period, in the Lukavac Healt Center

Department of Cardiology. They were divided into three groups. In the first group there were 15 patients, 8 (53,33%) men and 7 (46,66%) women without subjective complaints with MVP and arrhythmias. In the second group there were 29 patiants, 10 (34,48%) men and 19 (65,51%) women, with subjective complaints, non-complex (Lown I and II) ventricular arrhythmias and MVP verified on ultrasound exam. The third group consisted of 20 patients, 8 (40,00%) men, and 12 (60,00%) women, with subjective complaints, complex ventricular arrhythmias (Lown III, IV A, IV B) and a clearly identified MVP. All patients were 25 to 50 years of age .

All patients had medical history, clinical examina-

tion, ECG, stress testing, Holter ECG, Doppler ultrasound, LP, QTD, and HRV data. The following statistical tests were used: t-test, variance analysis, chi -square test, binary logistic regression and descriptive statistics. In all the tests applied the level of significance was set at 5%.

3. RESULTS

Using statistical methods we genuinely determined that a group of risk factors: new-onset negative T wave during stress testing in load (p< 0,01; HR 107), holosystolic murmur (p<0,01;HR 27,5), PMV score (7,8 +- o,7; p< 0,05; HR 18,6), anterior mitral leaflet thickness-AMLt (5,9+- 1,1 mm;p<0,05;HR 4,03), positive LP (p<0,01; HR 0,22), mitral leaflet displacement-MLd (3,3 +-0,6mm;p<0,05; HR 0,34), defined by a combination of direct and indirect non-invasive methods has the best prognostic value in determining onset of complex arrhythmia events with a sensitivity of 92%.

We also determined that a group of risk factors: prolonged QTD (89,1+-9,7ms;p<0,01;HR 1,32), decreased HRV-SDNN (140+-24ms;p<0,05;HR 0,43) and positive LP (p<0,05;HR 0,24) obtained only by direct methods has a high capability of prognosing complex arrhythmia events in MVP patients (88,3% sensitivity) but we haven't proved the possibility of predicting the type of arrhythmogenic abnormality.

Through statistical analysis we determined as well a significant correlation between direct rysk factors: positive LP (p< 0,05;r=0,159-0,548), prolonged QTD (p<0,05;

R=0,16-0,667), decreased HRV (p<0,05;r=0,166-0,548), with clinical, morphological and hemodynamic characteristics of the mitral complex (holosystolic murmur, new-onset negative T wave, ST segment denivelation, left ventricle diastole diameter –LVDd,AMLt,MLd, mitral annulus diameter-MAd, regurgitation fraction index-RFI,PMV score, right ventricle diastole diameter – RVDd, atrial fibrillation/undulation-FA-UA).

4. DISCUSSION AND CONCLUSION

This study confirmed that by combining direct and nondirect noninvasive methods we can create a group of risk factors that give the best prognosis (92% sensitivity) of complex arrhythmia onset. We have established, as well, a high prognostic value (88,3% sensitivity) of direct noninvasive methods only. Our results can help in clinical assessment and identification of high-risk group of patients with MVP for complex ventricular arrhythmia onset and sudden cardiac death (6, 7).

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