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**Functional classification of extrasystolic arrhythmia**

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**Introduction.** Extrasystoles" classifications mostly are based on ectopic centers localization and frequency per time. These classifications are not focus on the functional importance of extrasystolic and first post-extrasystolic reductions.

**Aim.** To make functional classification of extrasystoles based on hemodynamics and kinetics of main arteries.

**Methods.** 233 patients were observed with supraventricular and ventricular extrasystoles, which appeared in the phase of isovolumic decrease of intraventricular pressure before the mitral valve opening and in fast or slow ventricles filling phase in cardiocycle. We performed doppler - ultrasound of carotid, radial, ulnaris, posterior tibia, arch of foot arteries and sphygmograms of these arteries. The volume of cardiac output and transmitral blood flow were measured by echocardiography. To know the moment of extrasystoles appearance in cardio cycle and ectopic center localization we used apex-cardiography and electrocardiography. We determined the parameters of heart biomechanics and main arteries kinetics: speed, acceleration, capacity and work in each phase of heart cycle in systole and diastole, and also the periods of dominance of outflow over inflow. We analyzed the peak speed direct blood flow, blood flow volume.

**Results.** The increasing of main parameters (speed, acceleration, capacity and work) was observed in first-extrasystolic contraction with the tendency: if earlier extrasystole appeared in cardiocycle than more changes were observed. We can quantitatively characterize different types of extrasystoles which are principally different in the degree of participation of resulting blood flow. We measured the contribution of extrasystolic and first post-extrasystolic reduction. So we classified extrasystoles due to its functional importance:

1. Extrasystoles before the mitral valve opening.
2. Extrasystoles in phase of fast ventricles filling before the peak of transmitral blood flow.
3. Extrasystoles in phase of fast ventricles filling after the peak of transmitral blood flow.
4. Extrasystoles in slow ventricles filling phase.
5. Coupled and group extrasystoles.

**Conclusion.** The main important thing for hemodynamic measuring is the moment of extrasystoles' appearance in cardiocycle and the ability of the first post-extrasystolic reduction to reestablish an adequate resulting blood flow. The treatment and cupping of extrasystoles is determined by the degree of hemodinamic disturbance in each variant of arrhythmia. The most changes of blood flow are with extrasystoles before the mitral valve opening. The first poist-extrasystolic reduction causes the significant increase of cardiac output, arteries diameter and non-stability of atheromas.