Abstract

Experimental cardiology deals with the study of mechanisms related to development of cardiovascular disease, risk factors and possibilities of improving heart resistance to oxygen deficiency and increased workload. Observed mechanisms and context are proved in experiments using laboratory rats and mice where its effect on the heart function is detected. Many invasive and non-invasive methods are used for that. One of the basic non-invasive methods are echocardiography of nuclear magnetic resonance, which is both technically and methodically more challenging. Echocardiography allows to evaluate the heart function and geometry in laboratory rats and mice repeatedly and in physiological conditions and minimal influence to the animal. Using echocardiography allows observing changes and effect of studied mechanisms continuously.

From the range of parameters used for echocardiographic measurement some have their origin in clinical praxis and empiric nature and other are introduced to cover specific needs in the experiment. Suitability of various echocardiographic parameters for evaluating heart function in laboratory rats and mice is given by accuracy reached for this small hears, need for approximation the heart and ventricles using simple shapes and for clear context of parameter values and its physiological meaning (for example blood flow – pressure). The purpose of this work is to summarize methods used in echocardiography and the properties of usual parameters and critically judge their meaning and usefulness in practical application. It is also related to the need for being prepared to use echocardiography in my own future measurements.

Key Words: experimental cardiology, heart, rat, mouse, echocardiography