Summary. Taking into consideration the modern scientific data the article bases the expedience and necessity of indepth studies of neonatal arrhythmias. In the neonatal period arrhythmias could provoke the development of an acute heart failure and cause a cardiogenic shock and death. The most frequent and prognostically important arrhythmias for neonates are considered to be supraventricular block, ventricular tachycardia and fibrillation/atrial flutter.

It is reported that among fetal arrhythmias the atrial flutter makes up to 30-46%. The authors give data that in case of the emergence of atrial flutter the prognosis depends on the fetal maturity and the timeliness of giving a diagnosis. The presence of the concomitant pathology – congenital heart disease with hemodynamics malfunctions – is considered to be prognostically unfavourable.

The diagnostics of neonatal arrhythmias is complicated by the fact that even under the leading clinics conditions it is hard to conduct electrocardiography of high resolution or to use the method of 20-minute evaluation of rhythm variability because of complete quiescent mode’s lack and the low level of noise. The main methods of neonatal arrhythmia diagnostics remain HR estimation and the results of ECG. The data of pregnancy course and prenatal ultrasonic scanning are also important. The possibility of defining the character and the extent of intensity of arrhythmia exactly is given by HM of ECG. One of the indications for such tests is a check-up of patients with a high risk of health dangerous cardiac arrhythmias and a heart blocking.

The cause factors of neonatal arrhythmias development refer congenital heart diseases, myocarditis, heart tumors, metabolic homeostatic disorders, and the effect of medicines. Autoimmune diseases of connective tissues, diabetes, and thyroid gland diseases play an important role in the genesis of arrhythmias. The affection of the central nervous system as a result of prenatal hypoxia, birth injury and neonatal asphyxia are also significant. A child with the arrhythmia which was first detected in a neonatal period needs an obligatory consultation of a cardiologist.
Atrial flutter is a serious form of neonatal arrhythmias that can cause the grave hemodynamic disorders.

Atrial flutter is a macro-re-entry tachycardia that appears in auricles’ tissues and causes the heart rate that can be over 250/450 str./min.

During a typical atrial flutter attack the ECG registers a right regular atrium rhythm where the waves F are seen instead of spikes P with no isoline between them (“saw-like” waves). In case of a focal atrial flutter pathologic impulses are generated from a small part of the atrium myocardium – “focal source”. Prognostically unfavourable is the multi-focal in its origin atrium tachycardia when the ECG registers three or more morphologically different spikes P in one branch; there still exists an isoline between spikes P and occur irregular PR-, PP-, RR-intervals. It is considered that two main processes are important here – the emergence of atrial activation focuses (mostly located in pulmonary veins) and multiple re-entry waves.

Atrial flutter causes the decreasing of heart emission as a result of the “fall” of an atrium systole. Therefore, if the atrial flutter is first detected to a newborn or a child of any age with unstable hemodynamics, the synchronized cardioversion under general anesthetic or sedation is used. Then, in case of arrhythmogenic cardiomyopathy, the signs of heart failure amiodarone (cordarone) with digoxinum is prescribed; if taken together the dose of the last decreased to 25-50% from the average.

To illustrate the data shown above, the authors give the infant development case record of newborn P. born in September 2013 with a body weight of 3200 g and fetal age of 37 weeks. In the time of birth a respiratory distress syndrome was diagnosed. The atrium rate of 472 strikes/min., ventricles rate – 205 strikes/min. were detected by the ultrasound in M-mode. The ECG showed the distinctive atrium waves F of the typical saw-like shape and confirmed the rhythm disturbance – the atrial flutter. Normalization of the heart rhythm was detected in 20 hours after the beginning of antiarrythmic therapy – amiodarone (cordarone).
The authors consider that the newborn’s atrial flutter developed in the early neonatal period as a result of the right atrium’s overload with the volume against the background of actively functioning fetus communications (a broad oval hiatus with a left-right bypass, PDA). The inborn structural heart pathology being absent, arrythmics did not cause grave hemodynamic disorders, was quickly terminated by antiarrythmic therapy – amiodarone, that is had a good prognosis.