The study of postoperative arrhythmias after surgical treatment of congenital heart disease

Introduction: due to the progress made by pediatric cardiovascular surgery in the last period, the incidence of postoperative arrhythmias is growing. There are two main periods of risk in the appearance of postoperative arrhythmias: the immediate postoperative period and the belated postoperative period.

Aim of study: the determination of the incidence of postoperative arrhythmias and the assessment of risk factors in the appearance of postoperative arrhythmias.

Work method: for the achievement of these objectives I have analyzed a number of 216 children with the following congenital heart diseases: 66 patients with atrial septal defect (ASD), 62 patients with ventricular septal defect (VSD), 36 patients with antrioventricular septal defect (AVSD), 52 patients with tetralogy of Fallot (TF). I have conducted a retrospective clinical study, by studying observation sheets, as well as other specific documents regarding patients found in the archives of the Institute I work in, especially I have conducted the analysis of ECG courses, the study of intense care observation sheets, as well as a prospective study, by following postoperative patients in a long term. The follow-up of the patients in the immediate postoperative period has been made by continuous monitoring of ECG, periodic echocardiography, ECG course, in some cases ECG course on the epicardial wires. In the cases which presented rhythm disorder or conduction abnormalities, after evaluating the hemodynamic state, performing echocardiography and analysis of ECG course, the therapy was determined.
I would like to mention that the treatment of arrhythmias is not the subject of study of my doctoral thesis. The follow-up of patients has been carried out at regular intervals of 1 month, 3 months, 6 months, then 1 year, over a period of minimum 4 years.

Results: are presented in groups of study. Therefore, the incidence of early postoperative arrhythmias was 33.79%. After surgical closing of ASD the incidence of postoperative arrhythmias was 10.41%, and the risk factors of statistical significance are the prolonged period of ischemia and the prolonged duration of the surgery. In the group of patients with VSD, the incidence of postoperative arrhythmias was 37.09%, the most frequent postoperative arrhythmia was junctional ectopic tachycardia and the risk factors of early postoperative arrhythmias being the size of the ventricular septal defect, the prolonged by-pass time and ischemic time. In the case of patients with AVSD, the incidence of postoperative arrhythmias was 41.66%, the most frequent arrhythmia was the complete atrioventricular block, and the prolonged ischemic time was the risk factor of statistical significance. At patients with tetralogy of Fallot the incidence of early postoperative arrhythmias is 44.22%, the most frequent arrhythmia is junctional ectopic tachycardia, followed by complete atrioventricular block, then ventricular tachycardia. The risk factors of statistical significance in early postoperative arrhythmias are the prolonged by-pass time, the prolonged ischemic time and high age at the time of the operation.

The arrhythmias of the belated postoperative period were the complete atrioventricular block, the right bundle branch block, extrasistolic arrhythmias, atrial tachycardia.

The main conclusions were the following:

1. The incidence of early postoperative arrhythmias is significant
2. The most frequent rhythm disorder in the early postoperative period is junctional ectopic tachycardia
3. The congenital heart disease with the highest level of risk for developing postoperative arrhythmia is tetralogy of Fallot
4. The prolonged by-pass time and the prolonged ischemic time are the most important risk factors of early postoperative arrhythmias.
5. The evolution of early postoperative arrhythmias is self-limited.
6. In the belated postoperative period there were no malign arrhythmias