

Evaluation and Management of Neonatal Supraventricular Tachycardia

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Introduction. Supraventricular Tachycardia (SVT) is the most common neonatal dysrhythmia. Incidence of SVT in children is 1 in 100 for children of all ages and 1 in 250 for neonates (Garson A. J., Gillette P. C., et al.). SVT includes forms of tachycardia that either arise above the bifurcation of the bundle of His or that have mechanisms dependent on the bundle of His. Persistent SVT could lead to heart failure and cardiogenic shock.

Aim, Materials and Methods. The aim of this study is to assess the efficacy and safety of different drugs for the treatment of SVT in neonates. In this study, 19 neonates were enrolled, who were admitted to the Clinic of Neonatology at University Children's Hospital with SVT between 2012 and 2016. Neonates with sepsis, metabolic disease, and central nervous system problem were excluded from the study. Data such as gender, age, weight, gestational age, presence of congenital heart disease, duration of hospitalization period, duration of SVT was collected. Drugs that controlled SVT (adenosine, digoxin, propranolol, amiodarone, and synchronized cardioversion), and list of medicine administered at releasing time (digoxin, propranolol, rhytmonorm, sotalol). For the first line of treatment, all patients received vagal maneuvers and adenosine (100 µg/kg/dose, with increasing dose up to three times). For the second line of treatment, patients received intravenous digoxin and then oral propranolol. If SVT was persistent, patients received intravenous amiodarone.

Results. Median gestational age of our patients was 39 weeks (range 36–41 weeks). Median body weight was 3.6 kg (range 2.95–4.73 kg). One from 19 (5.2%) neonates have ventricular septal defect. Arrhythmia was diagnosed antenatally in 11 fetuses and 4 mothers (21.05%) received digoxin antenatally. All patients were monitored continuously using Philips MP 55 vital signs monitor and Holter monitor. Median time of onset of SVT after birth was 24 hours (range 1–528 hours). Reoccurrence of SVT was observed in 5 neonates. Lengths of hospital stay was 9 days (range 1–30 days). 6 (31.57%) neonates received respiratory support in the form of invasive or noninvasive mechanical ventilation. Duration of respiratory support (median) was 3.5 days (range 12 hours – 5 days). One out of 19 patients got synchronized cardioversion, repeated 4 times without effect. Of two neonates, not treated neither had clinical recurrences of SVT. Control of SVT was achieved after the administration of adenosine in combination with amiodarone (5 neonates), amiodarone alone (2 patients). In one patient digoxine was used to control SVT, local cold in one and hypothermia in one patient. Maintenance therapy was provided using propranolol alone (in 7 neonates) or in combination with rhytmonorm (in 1) or sotalol (in 1 neonates) and digoxin in 4 patients.

Conclusions. Diagnosis of arrhythmias in the neonatal period is essential for appropriate and optimal treatment. Antenatal diagnosis and maternal treatment is important to control SVT. According to the results of our study, it was concluded that in most SVT patients conventional treatment can be helpful and only minor percentage of patients need to receive prolonged and complex treatment, including respiratory support.