Type and management of tachycardia in admitted neonates and infants: Ten-year experience in Daegu city

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Introduction: Sustained tachycardias are important clinical problems in neonates and infants. Their myocardium is intrinsically more vulnerable to high ventricular rate, and arrhythmias can be life-threatening early in life. The aim of this study was to evaluate the characteristics, management and prognosis of subjects with tachycardia on the basis of our ten-year experience.

Methods: A total of 62 neonate and infants whose ECG showed tachycardia within the first year of life between June 2007 and June 2017 at three medical centers in Daegu were enrolled. Patients who had sinus tachycardias were excluded.

Result: Thirty-five boys and 27 girls were admitted for management of tachycardia. Their tachycardias were diagnosed at an average age of 2 month (1 day-10 month) and an average weight of 4.6 kg (2.2-11kg). Half of the patients had tachycardia attack in the first month of life (31/62), and most (51/62) had it within the first three months. Only 7 patients presented with tachycardia after 6 months of age. Twenty-one patients (34%) were associated with OHS(group 1)(Table 1). In 41 patients who did not undergo OHS(group 2), SVT was the most common (20/41), the second was atrial tachycardia (AF and MAT, 15/41) and the remaining was VT (6/41). Almost half of them (18/41, 44%) was noticed incidentally, and 22% (9/41) and 30% (12/41) were noticed as fetal arrhythmia and subtle findings, respectively. Nine patients showed congestive heart failure and all of them were under 3 months of age. In patients who underwent OHS, JET was the most common (16/21) and sometimes resulted in hypotension. Their tachycardias were detected during cardiac monitoring for postoperative care. The first line therapy was cardioversion for AF, adenosine for SVT, amiodarone or conservative treatment for JET, and verapamil or cardioversion for VT. (fig. 1). For the 29 patients, maintenance therapy began with antiarrhythmics including beta blocker, digoxin, class I or III drugs (fig. 2). The duration of medication was median 26 months (2-75 month). Tachycardia did not recur in most of them after the first three months. Three patients failed completely tachycardia control. One patient with AVRT underwent ablation at 6 years old. The other patients (one AVRT, one MAT) were treated with beta blocker and amiodarone, but the patient with MAT did not show normal sinus rhythm on ECG and had sudden cardiac death. None of the others died.

Conclusion: In the neonate and infants, AVRT and post-OHS JET are the most common type of tachycardia. Other types of tachycardia, such as AF, MAT, and VT, require precise diagnosis before treatment. For the specific myocardial state of subjects, accurate diagnosis and appropriated treatment can decrease the morbidity of tachycardia.