

Evaluation Tp-e interval and Tp-e/QT ratio in children with aortic stenosis

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Objective: Patients with aortic stenosis (AS) may experience some life-threatening cardiac events due to the ventricular arrhythmias. Recently, new ECG-derived indexes such as Tp-e which is the measurement of the interval between the peak and the end of the T-wave has emerged as a marker of transmural dispersion of repolarization (TDR). As Tp-e interval, Tp-e/QT ratio is also used as an index of ventricular repolarization. Prolongation of Tp-e interval and increased Tp-e/QT ratio have been found associated with malignant ventricular arrhythmias. Although, these parameters have been studied in adult patients. The novel repolarization indexes Tp-e and Tp-e/QT have not been studied among children with AS previously. The aim of this study was to evaluate Tp-e interval and Tp-e/QT ratio in children with AS.

Methods: The standard 12-lead electrocardiograms of 66 children with aortic stenosis and 58 age- and-sex matched healthy children were assessed by a blinded specialist.

Results: Tp-e, QTc and QT dispersions were found significantly higher in AS group compared to healthy subjects (Table). However we did not find any difference in Tp-e interval, Tp-e/QT and Tp-e/QTc ratios between AS patients and the controls. When AS patients were compared according to degree of aortic stenosis (mild, moderate and severe). We did not find any difference Tp-e interval, Tp-e dispersion, QT dispersion, Tp-e/QT and Tp-e/QTc ratios between groups. And we did not find any correlation between these parameters and severity of aortic stenosis.

Variables	Patient group (n:66)	Control group (n:58)	p
Age	6.7±5.9	7.2 ±3	0.58
Gender (M/F)	49/17	29/29	0.36
Tp-e interval (ms)	79±21	82±14	0.44
Tp-e interval dispersion (ms)	24±11	41±20	<0.001
QT interval (ms)	310±51	321±32	0.17
QT dispersion (ms)	29.2±17	21±14	0.02
QTc interval (ms)	393±21	398±26	0.23
QTc dispersion (ms)	25±18	15±11	0.001
Tp-e /QT	0.25±0.05	0.25±0.04	0.85
Tp-e/QTc,	0.19±0.05	0.20±0.03	0.5

Conclusions: Our study showed that Tp-e, QT and QTc dispersions were increased in children with AS irrespective degree of Aortic stenosis. Further prospective studies are needed for demonstrating the clinical importance of these parameters.

Table. Electrocardiographic characteristics of patients and controls