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Prolonged Tp-e interval and Tp-e QT ratio in children with Mitral Valve Prolapse

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Introduction: Although it is considered as a benign condition, previously reported studies have showed that a subset of patients with mitral valve prolapse (MVP) may be at risk of ventricular arrhythmia and sudden cardiac death (SCD). Previously reported studies have suggested that the interval between the peak to the end of the T-wave (Tp-e) can be used as a marker of transmural dispersion of repolarization (TDR) and increased Tp-e interval and Tp-e/QT ratio Also, Tp-e/QT are associated with ventricular arrhythmias and SCD. The aim of this study was to assess alterations in ventricular repolarization by using Tp-e interval and Tp-e/QT ratio in children with MVP and to investigate its relationships with degree of valvular regurgitation.

Methods: This study prospectively investigated 110 children with MVP and 107age-and sex-matched healthy control subjects. Tp-e interval, Tp-e/QT ratio, QT and QTc dispersions were measured form a 12-lead electrocardiogram were compared between groups.

Results: QT, QTc dispersions, Tp-e interval, Tp-e/QTc ratios were found significantly higher in patients with MVP (Table 1) .A positive correlation was found between Tp-e/QTc ratio and the degree of MR (p< 0.05; r=0.2). However, degree of MR was not associated with QT, QTc and Tp-e intervals, QT, QTc, Tp-e dispersions and Tp-e/QT ratio (all p values > 0.05).

Conclusion: Individuals with MVP may be more prone to ventricular arrhythmias due to prolonged QTd, QTcd, Tp-e interval, increased Tp-e/QT and Tp-e/QTc ratios. Therefore, due to their longer life expectancy, children with MVP should be followed up in terms of life-threatening arrhythmias

Parameters	Patient group (n:110)	Control group (n:107)	*p*
QT (ms)[a]	340 (40)	320 (40)	0.46
QTc (ms) (mean±SD)	388±25.8	390±25.1	0.85
QT dispersion (ms)[a]	40 (20)	20 (20)	<0.001
QTc dispersion (ms)[a]	20 (30)	10 (10)	<0.001
Tp-e interval (ms)[a]	90 (20)	80 (20)	0.02
Tp-e interval dispersion (ms)[a]	40 (20)	40 (10)	<0.001
Tp-e /QT[a]	0.26 (0.04)	0.25 (0.05)	0.001
Tp-e/QTc (mean±SD)	0.23±0.03	0.21±0.03	<0.001

Table 1 Electrocardiographic parameters of patients and controls

[a] Data are expressed as median with range in parentheses **;** ms : milliseconds n= number of the subjects