

Effect of right bundle branch block on T peak to end interval

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Introduction: The interval between the peak and end of the T wave (TpTe) is an index of spatial dispersion in transmural cardiac repolarization (SDR). Children post cardiac surgery with right bundle branch block (RBBB) may have an altered SDR. Patients with right bundle branch block are purported to be at higher risk for arrhythmia. The measurement of TpTe in such children is potentially useful in assessment of arrhythmia risk.

We examined the behaviour of TpTe in the presence of right bundle branch block (RBBB) as a potential marker for arrhythmogenesis.

Methods: 45 children with RBBB enrolled. In 42, RBBB occurred post cardiac surgery, 3 se underlying cardiomyopathy. Cohort of 400 normal children served as controls. aDigital 12 lead electrocardiogram (ECG) was recorded (speed of 50 mm/s) and stored.

Parameters measured TpTe, RR, QT, and JT intervals (leads II and V5). For heart rate correction Bazett formula applied ($TpTe/\sqrt{RR}$), $TpTe/B$; and Fridericia formula ($TpTe/RR^{1/3}$) $TpTe/F$, and calculated the $TpTe/QT$ and $TpTe/JT$. Results compared to normal data (400 children). Descriptive and analytical statistics, significance level $p < 0.05$.

Results: median age patients 7,6 years + 5,9: controls 5,3 years + 5.1. Mean QRS duration in RBBB group 120ms (range 88-168 ms). TpTe in leads II and V5 was significantly longer in RBBB patients compared to controls. $TpTe/B$, and $TpTe/F$ in leads II and V5 significantly longer than controls. The $TpTe/JT$ (leads II and V5) higher in RBBB patients than controls (this ratio utilised to eliminate potential effects of QRS prolongation on $TpTe/QT$). All measured values in RBBB patients were significantly different from controls $p < 0.05$. No patients have thus far presented with life threatening arrhythmias.

Discussion: The TpTe reflects global myocardial repolarization and is a surrogate diagnostic parameter. In our cohort of RBBB patients, TpTe and ratio to JT and QT were found to be prolonged when compared to control subjects. No patients to date have developed important ventricular arrhythmia. The role of right ventricular size and haemodynamics on TpTe is under investigation.