

Analysis of QT dispersion and corrected QT interval in children with hypertrophic cardiomyopathy

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Introduction:

Hypertrophic Cardiomyopathy (HCM) in children and adolescents is associated with an increased risk of ventricular arrhythmias which may originate from repolarization disturbances. Study aimed to assess QT dispersion (QTd) and corrected QT interval (QTc) in children with HCM.

Material and methods:

Study included 32 children with HCM (4-18 years; 14 girls) and 58 healthy children (4-19 years; 25 girls). In all children the physical examination was carried out, as well as echocardiographic examination and resting ECG tracing (50 mm/s) with the assessment of QTc and QTd. By means of Mann-Whitney test the continuous values of QTc and QTd were compared between analyzed groups. Continuous variables were presented as median and IQR. Fishers exact test was used to analyze the rate of prolonged QTd values ≥ 50 ms and QTc ≥ 440 ms. The logistic regression analysis was carried out to estimate Odds ratio (OR) with 95% confidence interval (CI) for occurrence of the abnormal QTd and QTc values, depending on the presence of HCM.

Results:

In children with HCM, in comparison with the control group, there were noted significantly higher values of QTd: 40 (30-50) ms vs. 20 (20-30) ms ($p < 0.0001$) and QTc: 423 (397-446) ms vs. 391 (386 – 401) ms ($p < 0.0001$).

The values QTd ≥ 50 ms ($p < 0.01$) and QTc ≥ 440 ms ($p < 0.0001$) occurred significantly more frequently in group of children with CHM. QTd ≥ 50 ms was identified in 6 (19%) children with HCM. In 7 (22%) children with HCM the QTc value exceeded 440 ms. No abnormal values of QTd or QTc were noted in any child from the control group. The presence of HCM was related to increased risk of the occurrence of QTd ≥ 50 ms (OR 3.7; 95% CI 19.7 – 5277.6; $p < 0.0001$) and QTc ≥ 440 ms (OR 5.7; 95% CI 20.2 – 5277.6; $p < 0.0001$).

Conclusions:

The presence of HCM in children is associated with the increase of dispersion and with the prolongation of QT interval.