REPOLARIZATION PATTERNS IN VENTRICULAR OVERLOAD SECONDARY TO CONGENITAL HEART DISEASES: EFFECT OF TYPE OF SHUNT AND LEVEL OF CYANOSIS

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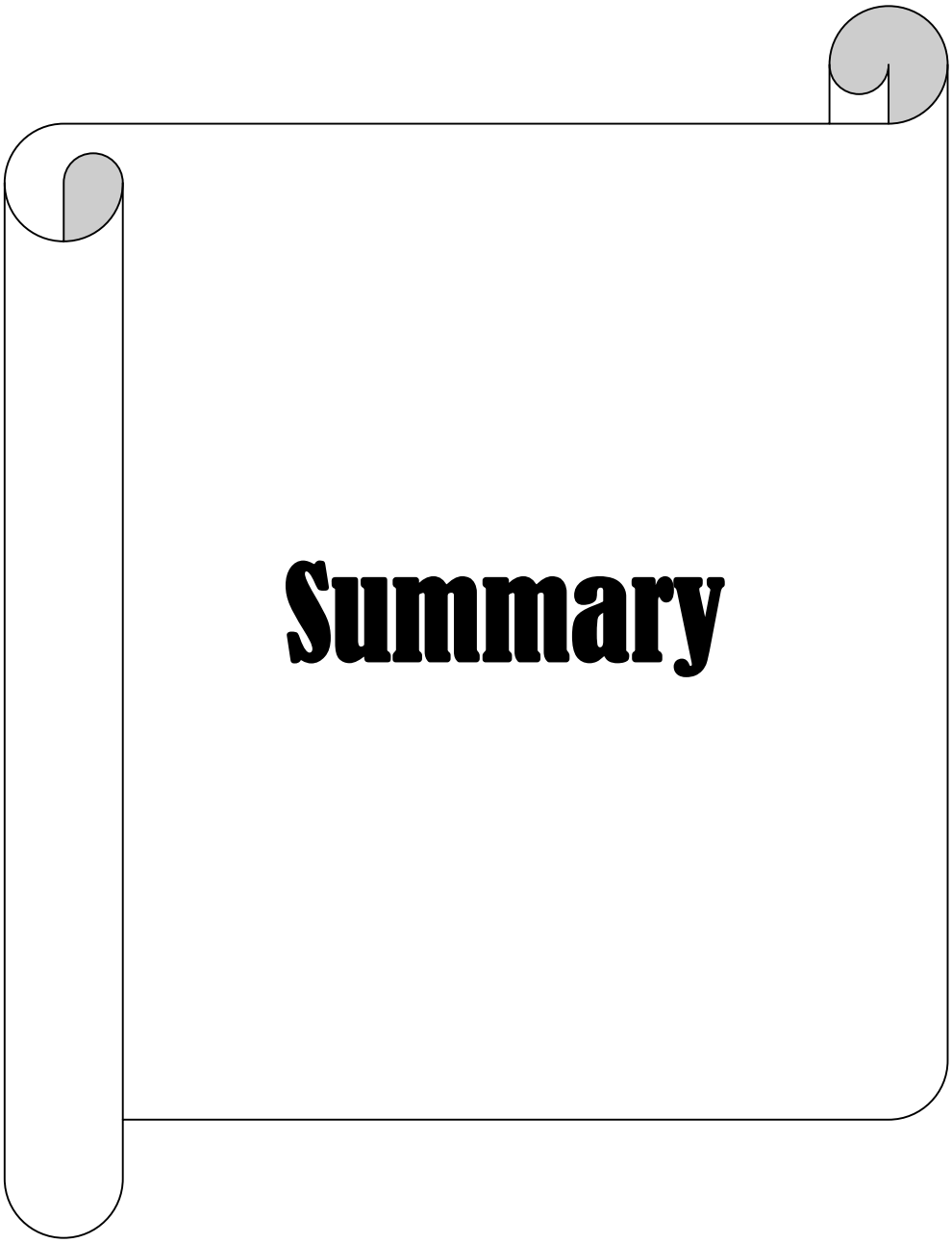

Summary

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The clinical usefulness of measuring changes in the duration of the QT interval in the standard 12-lead ECG is a topic of growing interest. The use of QT measurement is considered as an index of the homogeneity of myocardial repolarization, which could be applied as a potential prognostic tool in the detection of future ventricular tachyarrhythmic events and death

The duration of the Q-T interval varies with the cardiac rate; a corrected Q-T interval (Q-Tc) can be calculated using Bazett's formula, Fridericia formula and Linear formulae.

According to Bazett's formula, the normal(QTc) interval is 0.40(±0.014) second with the upper limit normal 0.44 second in children 6months and older but slightly longer in the newborn and small infants with the upper limit of normal 0.47 second in the first week of life and 0.45 second from the first week till the age of 6 months.

A prolonged QT indicates a myocardium at risk for triggered activity and this is associated with dangerous ventricular tachyarrhythmia.

Short QT syndrome is characterized by an abnormally short QT interval and may lead to sudden death while early repolarization (defined as an elevation of the QRS–ST junction {J point} in at least two leads) has been reported recently with idiopathic ventricular fibrillation.

The aim of this work is to study the repolarization patterns in pediatric patients with cyanotic and acyanotic congenital heart diseases.

This study included three groups:

1. The first group includes 50 patients with congenital acyanotic heart diseases with either pressure or volume overload.

2. The second group includes 50 patients with cyanotic heart diseases with either increased or decreased pulmonary blood flow.

3. The third group (control group) includes 50 healthy children.

For all the patients' oxygen saturation measurement, echocardiography and 12 leads ECG done and the corrected QT measured using 3 formulas: Bazett's formula, Fridericia and linear formula. The corrected QT compared in different groups.

We found that QTc prolongation affects patients with congenital heart diseases more than normal population especially Patients with acyanotic heart diseases and volume overload while no significant difference between congenital cyanotic heart diseases patients with increased or decreased pulmonary blood flow and control.

Increasing LVEDD is a risk factor of QTc prolongation while pulmonary hypertension is not a risk factor of prolongation of QTc.

Early repolarization affecting patients with CHDs (mainly cyanotic heart diseases) more than normal children and decreasing oxygen saturation is a risk factor of early repolarization.