Assessment of QT Interval in Ventricular Conduction Defects: Validation of a New Formula

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INTRODUCTION

QT interval prolongation is a marker of abnormal repolarization. Abnormal short and long QT intervals are associated with increased risk of syncope, and sudden death.

Because of its inverse relationship to heart rate, the QT interval should be corrected for heart rate.

In patients with major ventricular conduction defects (VCD), the assessment of ventricular repolarization remains controversial. Use of special indexes, or two-parameters formulas for QTc and JTc has been proposed. However, the complexity of these methods, precludes its wide clinical application.

We have proposed (AHA 2012) a very simple formula for QT correction:

\[ QTc = \frac{2QT}{1+RR} \]

IN METHODS

We have analyzed the data from a random subset (19023 subjects, including 434 VCD cases) of the ECG-VIEW II, a Korean electrocardiogram database. We calculated the QTc interval using 4 correction formulas (Bazett, Fridericia, Framinham, and our new formula). We correlated the QTc values of each method with the RR interval.

An ideal correction formula should minimize the coefficient of determination \( R^2 \), and the slope of the line of regression QTc vs RR.

RESULTS

We found that our formula provides the best correction. \( R^2 \) for the new formula 0.07, Bazett 0.16, Fridericia 0.22, Framinham 0.12).

CONCLUSION

We propose a very simple, universal formula for the evaluation of QT interval in patients with normal conduction and in patients with major ventricular conduction defects.

\[ QTc = \frac{2QT}{1+RR} \]

Take home message: You can use our new formula, in patients with normal QRS and in patients with major ventricular conduction defects. In patients with VCD the upper normal limit is 30 ms higher.

REFERENCES. Contact

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