

Relationship between ventricular repolarization parameters and the inducibility of ventricular arrhythmias during electrophysiological study in patients with coronary artery disease

Guilherme de Carvalho¹, Dalmo Moreira², Renato Lopes³, Márcia Olandoski⁴, Beatriz Galvão², Cauê Pessoa², Raquel da Luz², Bruna Ermano², Bruna de Medeiros², and Luciana Armaganijan²

¹Heart Institute (InCor) Of São Paulo University Medical School

²Dante Pazzanese Institute of Cardiology

³Duke University

⁴Pontifical Catholic University Of Paraná

October 30, 2020

Abstract

INTRODUCTION: Malignant ventricular arrhythmias (MVA) are often the main cause of sudden cardiac death (SCD), especially in patients with pre-existing coronary artery disease (CAD). The identification of factors associated with SCD in this clinical setting is important and might help physicians in identifying this high risk group of patients. We evaluated the association between 12-lead ECG ventricular repolarization parameters and the induction of MVA on the electrophysiological study (EPS). **METHODS AND RESULTS:** 177 patients [mean age 65 ± 10.1 yo, 83.6% male, mean LV ejection fraction (LVEF) $37.5 \pm 13.6\%$] were analyzed. For each 10ms increment in the QT interval, an increase of 7% in MVA inducibility was observed. The QT cut-off point of 452 ms had an accuracy of 0.611 for predicting MVA ($p=0.011$). Male gender ($OR=4.18$, $p=0.012$), $LVEF < 35\%$ ($OR=2.32$, $p=0.013$), amiodarone use ($OR=2.01$, $p=0.038$) and prolonged QT ($OR=1.07$, $p=0.023$) were independent factors associated with MVA. $QT > 452$ ms in patients with ventricular dysfunction was associated with significant increased risk of MVA ($OR=5.44$, $p=0.0004$). In patients with $LVEF \geq 35\%$, QT dispersion (QTd) was significantly higher in those with inducible MVA. $QTd > 20$ ms had an accuracy of 0.638 in predicting MVA, with 81.3% negative predictive value (95% CI 63-92.1%). **CONCLUSION:** QT interval was an independent factor associated with MVA in patients with CAD. The combination of ventricular dysfunction and prolonged QT interval was associated with a 5-fold increase of MVA induction. Male gender, amiodarone use and decreased LVEF were also associated with increased risk of inducibility of MVA on the EPS.

Hosted file

Paper_ERP_MVA_CAD.pdf available at <https://authorea.com/users/371603/articles/489870-relationship-between-ventricular-repolarization-parameters-and-the-inducibility-of-ventricular-arrhythmias-during-electrophysiological-study-in-patients-with-coronary-artery-disease>