

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

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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 > 452ms in patients with ventricular dysfunction was associated with significant increased risk of MVA (OR=5.44, $p=0.0004$). In patients with LVEF [?] 35%, QT dispersion (QTd) was significantly higher in those with inducible MVA. QTd > 20ms 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.

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