



Prevention

ELECTRICAL REMODELING PREDICTS RISK OF SUDDEN CARDIAC DEATH IN ASYMPTOMATIC ADULTS

Moderated Poster Contributions
Poster Sessions, Expo North
Saturday, March 09, 2013, 10:00 a.m.-10:45 a.m.

Session Title: Prevention: Sudden Cardiac Death Prevention
Abstract Category: 24. Prevention: Clinical
Presentation Number: 1101M-8

Authors: *Larisa Tereshchenko, Dan Arking, Nona Sotoodehnia, Yiyi Zhang, Lichy Han, Ronald Berger, Gordon Tomaselli, David Siscovick, Wendy Post, Josef Coresh, Eliseo Guallar, Elsayed Soliman, Johns Hopkins University School of Medicine, Baltimore, MD, USA, Wake Forest School of Medicine, Winston Salem, NC, USA*

Background: The majority of sudden cardiac death (SCD) cases occur in asymptomatic adults. Improved strategies are urgently needed to identify individuals at high risk. Electrical remodeling measured by the sum absolute QRST integral (SAI QRST) has recently emerged as a predictor of SCD in heart failure patients with implanted cardioverter-defibrillators. We hypothesized that SAI QRST is an independent predictor of SCD in asymptomatic adults.

Methods: We analyzed baseline resting digital 12-lead ECGs of 14675 participants of the prospective community-dwelling Atherosclerosis Risk In Communities (ARIC) cohort. Individuals with QRS > 120 ms were excluded. The inverse Dower transformation was applied to construct orthogonal XYZ leads. Absolute QRST integral was measured as the arithmetic sum of areas under the QRST curve. The sum magnitude of three orthogonal leads absolute QRST integral (SAI QRST) was calculated by custom Matlab software. Competing risks analysis was performed for competing risk of SCD (both definite and probable) against non-SCD with adjustment for significant predictors of outcomes as determined in age-, gender-, race- stratified multivariable Cox analyses.

Results: During a median follow-up of 14 years, 260 cases of SCD and 1848 cases of non-SCD occurred. In multivariable competing risks regression analysis, SAI QRST significantly predicted SCD after adjustment for study center, age, gender, race, body mass index, history of myocardial infarction, hypertension, diabetes mellitus, smoking, total cholesterol, high density lipoprotein, mean T wave amplitude on XYZ leads, spatial QRS-T angle, spatial TT' angle, QTc, and QRS duration (subHR for 5th quintile vs. 1st quintile: 1.69; 95% CI 1.05-2.73; P=0.03). At the same time, SAI QRST predicted non-SCD (subHR for 5th quintile vs. 1st quintile 1.30; 95%CI 1.11-1.54; P=0.001) after adjustment age, race, gender, study center, smoking, history of heart failure, hypertension, diabetes, creatinine, level of physical activity, mean heart rate, QTc, and spatial QRS-T angle.

Conclusions: In asymptomatic adults with narrow QRS, increased SAI QRST independently predicts both SCD and non-SCD in competing risk analysis.