Abstract: P1491

P-wave morphology and risk of sudden cardiac death in patients with coronary artery disease

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Background: The significance of P-wave morphology in predicting sudden cardiac death (SCD) in patients with coronary artery disease (CAD) is not well-known.

Purpose: To test the hypothesis that the P-wave morphology parameters are associated with the risk of SCD in patients with CAD.

Methods: A total of 1,946 patients with angiographically verified CAD were included in the Innovation to Reduce Cardiovascular Complications of Diabetes at the Intersection (ARTEMIS) study. The P-wave morphology could be analyzed in 1,797 patients.

Results: During a follow-up period of 7.4 ± 2.0 years, a total of 43 (2.4%) patients experienced SCD or were resuscitated from sudden cardiac arrest (SCA). Of the P-wave parameters, the absolute P-wave residuum (PWR), the heterogeneity of the P-wave morphology (PWH) and the P-wave duration (Pdur), had the closest univariate association with the risk of SCD/SCA (0.0038 ± 0.0026 vs. 0.0022 ± 0.0017, p<0.001; 11.0 ± 5.2 vs. 8.6 ± 3.6, p<0.01; 142.7 ± 16.9 vs. 134.8 ± 14.3 ms, p<0.01, SCD/SCA vs. no SCD/SCA, respectively). After adjustments with factors that were associated with the risk of SCD/SCA, such as diabetes, smoking, left bundle branch block, high-sensitivity C-reactive protein and high-sensitivity troponin T, PWR (p<0.001), PWH (p<0.05) and Pdur (p<0.01) still predicted SCD/SCA but not non-sudden cardiac death. When these parameters were added to the SCD/SCA clinical risk model, the discrimination and reclassification accuracy of the risk model increased significantly (p<0.05, p<0.001) and the C-index increased from 0.745 to 0.787.

Conclusion: The P-wave morphology parameters predict independently SCD/SCA in patients with CAD.