Abstract: **P1503**

**Periodic repolarization dynamics and risk of sudden cardiac death in patients with stable coronary artery disease**

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**On behalf:** the ARTEMIS Investigators

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**Background:** Periodic repolarization dynamics (PRD) is a novel ECG-based marker quantifying cardiac sympathetic activity based on the assessment of low frequency fluctuations of the angles between adjacent T-wave vectors. Increased PRD, suggesting augmented sympathetic effects, is associated with increased risk for sudden cardiac death (SCD) in post-infarction patients with reduced left ventricular ejection fraction (LVEF). However, it is unclear whether PRD has predictive value for SCD in patients with stable coronary artery disease (CAD).

**Purpose:** To assess prognostic value of PRD for SCD in patients with stable CAD.

**Methods:** Patients with angiographically documented CAD (the ARTEMIS study) underwent 24-h ECG recording for the analysis of PRD from nighttime (0:00-6:00 am, n=1,574). Abnormal PRD was prospectively defined as ≥5.75 deg². The primary endpoint was SCD, including aborted cardiac arrests. All-cause mortality (ACM) and cardiac death, including aborted cardiac arrests, were secondary endpoints. Cox regression analyses were adjusted for age, sex, diabetes, history of myocardial infarction and LVEF. Integrated discrimination (IDI) and net reclassification indexes (NRI) were calculated using these covariates in the established risk model.

**Results:** Twenty-six (1.7%) patients encountered SCD, including 3 aborted cardiac arrests, during the 5-years follow-up. Cardiac mortality was 2.7% (n=42) and ACM 5.7% (n=89). PRD was significantly higher in patients with SCD compared to the other patients (median [1st-3rd quartile]: 6.20 [3.30-9.69] vs. 3.10 [1.84-5.70] deg², p=0.001). The patients with PRD=5.75 deg² (n=399), had increased risk for SCD (hazard ratio [HR]: 4.1; 95%CI: 1.9-8.9, p<0.001), cardiac death (HR: 3.3; 95%CI: 1.8-6.1, p<0.001) and ACM (HR: 3.0; 95%CI: 2.0-4.5, p<0.001). After adjustments, PRD=5.75 deg² remained a significant predictor of SCD (HR: 2.8; 95%CI: 1.3-6.3, p=0.011), cardiac death (HR: 2.2; 95%CI: 1.2-4.1, p=0.013) and ACM (HR: 2.1; 95%CI: 1.4-3.2, p=0.001). Inclusion of PRD=5.75 deg² into the established model improved classification of the patients with and without SCD (NRI: 0.364; 95%CI: 0.025-0.537, p=0.027) but not discrimination (IDI: 0.010; 95%CI: -0.004-0.046, p=0.159, C-index from 0.745 [95%CI: 0.632-0.858] to 0.771 [95%CI: 0.661-0.881]).

**Conclusions:** The present findings suggest that PRD, a novel marker of cardiac sympathetic effects, provides important and independent prognostic value for prediction of SCD in patients with stable CAD.
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