ABSTRACT

Electrocardiogram Markers Predicting Ischemic Stroke after Acute Coronary Syndrome

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Background

Patients with coronary artery disease (CAD) have increased risk of ischemic stroke (IS). Our aim was to screen for significant electrocardiogram (ECG) features for IS risk in patients treated for acute coronary syndrome (ACS).

Methods

This retrospective registry study is based on 7,760 ACS patients treated in Tays Heart Hospital (2007-2018) with follow-up for incident IS until December 31st 2020. ECGs recorded during ACSs were analysed by the Marquette™ 12SL™ ECG Analysis Program version 24. Preliminary screening for ECG features was conducted using age- and sex adjusted Cox regression analysis and corrected by multiple testing (Bonferroni method). Highly correlated variables were excluded from the final age-, sex- and atrial fibrillation (AF)/atrial flutter (AFL) adjusted Cox regression and subdistribution hazard (SDH) multivariable analyses.

Results

From 7,760 patients, 489 (6.3%) suffered IS during a median follow-up of 5.7 years (IQR 3.1-8.8). In the final multivariable model, the main risk factors were premature ventricular complexes (PVCs) or aberrantly conducted complexes in AF/AFL (SDH, 2.01 [1.22-3.31]), left ventricular (LV) hypertrophy (LVH) by Sokolow-Lyon criteria (SDH, 1.52 [1.12-2.06]), S wave amplitude in lead V4 (SDH, 1.13 [1.05-1.21]) and negative P wave peak time in lead V2 (SDH, 1.12 [1.02-1.23]). T wave amplitude in lead V6 (SDH, 0.78 [0.69-0.88]) and T wave duration in lead aVL (SDH, 0.85 [0.78-0.92]) showed an inverse association with IS risk. The continuous variables correspond to 1 SD.

Conclusions

ECG markers demonstrating LV dysfunction, LVH and atriopathy associate with IS risk after ACS, although external validation is still required.