P285 PROGNOSTIC ROLE OF ELECTROCARDIOGRAPHIC TEMPORAL CHANGES IN PATIENTS WITH ACUTE PULMONARY EMBOLISM. DATA FROM THE ITALIAN PULMONARY EMBOLISM REGISTRY (IPER)

M. Zuin, C. Bilato, A. Bongarzoni, P. Zonzin, F. Casazza, L. Roncon
UNIVERSITÀ DEGLI STUDI DI FERRARA, FERRARA; DIPARTIMENTO DI CARDIOLOGIA, OSPEDALI DELL’OVEST VICENTINO, ARZIGNANO; OSPEDALE S. CARLO, MILANO; DIPARTIMENTO DI CARDIOLOGIA, OSPEDALE CIVILE DI ROVIGO, ROVIGO; OSPEDALE S. CARLO, MILANO; DIPARTIMENTO DI CARDIOLOGIA, OSPEDALE CIVILE DI ROVIGO, ROVIGO

Background: The potential prognostic role of ECG changes during the course of acute pulmonary embolism (PE) has been poorly investigated over the years.

Methods: Data of patients prospectively enrolled in the IPER registry, having three ECGs (the first performed on admission, the second after three days of hospitalization and the third at discharge) were extracted and analyzed.

Results: Overall, 687 patients (286 males, mean age 69.0 ± 15.5 years) were included in the study. The normalization of electrocardiographic signs of right ventricular strain (RVS) (Right bundle branch block -RBBB), S1Q3T3 and negative T waves from V1 to V4 followed the same pattern in both non-high (i.e. hemodynamically stable) and high-risk (i.e. hemodynamically unstable) patients, showing firstly the normalization of the S1Q3T3 pattern followed by the resolution of the RBBB. Conversely, additional NTWs appeared between the first and second ECGs in about 20% of cases and then partially normalized at discharge. Persistence of RVS at the second ECG was associated with a higher risk of death within 30 days only in high-risk patients [HRa: 2.78 (95% CI: 1.05-7.31, p = 0.03), with a sensitivity, specificity, PPV and PPN of 90.0%, 94.1%, 85.7% and 96.0%, respectively. Furthermore, the lack of normalization of the RBBB [HRa: 2.78 (95% CI: 1.05-7.31, p = 0.003)], of the NTW [HRa: 1.63 (95% CI: 1.04-2.55), p = 0.0001] and of the resolution of qR complex in V1 [HRa: 12.5 (95% CI: 3.39-46.4, p < 0.0001)] were independent predictors of poor prognosis in the short term. High-risk patients showing at the second ECG the presence of RBBB and NTWs as well as disappearance of the qR complex in V1 had a higher 30-day increased risk of death [HR: 9.44, (95% CI: 5.22-17.05, p < 0.0001)]. The C-statistic confirmed in high-risk subjects an improvement in short-term prognostic power using the persistence of all three ECG signs (0.77, 95% CI: 0.51-0.94) or they single presence (0.61, 95% CI 0.42-0.79; 0.70, 95% CI: 0.52-0.88 and 0.74, 95% CI: 0.56-0.96, RBBB, NTWs and qR in V1, respectively).

Conclusions: The persistence of RBBB, NTWs, and qR pattern in V1 after 3 days from the hospitalization for acute PE represent an independent prognostic factors of death within 30 days in high-risk acute PE patients. In terms of prognostic power, the single evaluation of each ECG sign was lower compared to the overall or combined assessment.