

## Sensitivity of ECG Parameters to Diagnose Pulmonary Embolism

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**Introduction.** Pulmonary embolism (PE) is the third most common cause of death from cardiovascular disease [Goldhaber, Bounameaux, 2012]. The ECG is often abnormal in PE, but findings are neither sensitive nor specific to make diagnosis of PE only after ECG examination [Makropoulos et al., 2010].

**Aim, Material and Methods.** The aim of the study was to determine the prevalence of ECG signs in patients with acute PE and their connection to other clinical parameters. We conducted a prospective cohort study that collected data from PE patients enrolled in the RIETE registry. The study population includes consecutive patients with symptomatic PE, confirmed by CT pulmonary angiography. At admission, ECG was recorded.

The following ECG parameters were analysed and compared: 1) Heart rate and rhythm, 2) SIQIIITIII pattern, 3) T wave inversion (TWI) in V1-V4, 4) QRS morphology in V1. All data were analysed by SPSS 20.0.

**Results.** Our study included 106 patients with diagnosis of PE in a single university hospital between August 2014 and December 2015. Among the patients, 66 or 62.3% [53.1–71.5] were females and 40 or 37.7% [28.5–46.9] were males. Normal ECG was observed in 18 patients or 16.8% [9.8–23.8] with diagnosis of PE. Sinus rhythm was observed in 81.3% [73.9–88.7] cases, followed by atrial fibrillation in 15% [8.2–21.8] and other heart rhythms. Right bundle branch block (RBBB) was observed in 15.1% [8.3–21.9] and the SIQIIITIII sign in 8.5% [3.2–13.8]. TWI accounted 51.9% [42.4–61.4]. The value of heart rate ranged from 51 to 180. Sinus tachycardia was observed in 41.9% [32.5–51.3]. TWI in females was diagnosed in 37 cases or 56% [44.0–68.0] and in 18 males or 45% [29.6–60.4]. There was no significant difference between absent or present TWI and gender ( $\chi^2 = 1.22$ ;  $df = 1$ ,  $p = 0.27$ ) as well as between absent or present TWI and value of D-dimer ( $p > 0.05$ ). RBBB was observed in 15% [3.9–26.1] of males and in 15% [6.4–23.6] of females, which showed no significant difference ( $p > 0.05$ ). No significant difference was observed for RBBB and heart rate ( $p > 0.05$ ).

**Conclusions.** Normal ECG does not exclude PE. It in 41.9% is presented with sinus tachycardia and in 51.9% of cases with TWI, overall utility of these signs is limited according to their variable nature. No significant correlation between ECG signs and clinical parameters was found.