Validation of Pulmonary Embolism Severity Index and Predictor of Adverse Outcome in Thai Patient with Acute Pulmonary Embolism

Wisarat Wanchaitanawong¹ Arintaya Phrommintikul²

¹Department of Medicine, Faculty of Medicine, Chiang Mai University, ²Division of Cardiology, Department of Medicine, Faculty of Medicine, Chiang Mai University, Chiang Mai 50200, Thailand

Background: Pulmonary embolism (PE) is a common and potentially fatal disease still underdiagnosed. Rapid, accurate risk stratification is paramount in managing patients with acute pulmonary embolism (PE). The PE Severity Index (PESI) and simplified PESI (sPESI) are simple tools to stratify the risks in patients with acute PE. In Thailand there is limited data about PESI score/sPESI.

Objective: To validate PESI and sPESI and assess in-hospital outcome in patients with acute pulmonary embolism.

Methods: This was a retrospective cohort study. Medical records of all APE patients who were admitted to Maharaj Nakorn Chiang Mai Hospital, Chiang Mai, Thailand during 2012 – 2016 were retrospectively reviewed. The diagnosis of APE was confirmed. Patients’ data including demographics, symptoms, signs, risk factors, PESI score, sPESI score, radiological findings, investigations, treatments and outcome, were recorded. Data is presented as mean and percentage. Chi-square was used to compare categorical data between survivor and non survivor groups.

Results: Of 300 APE patients included in the study, 49.7% were male and 50.3% were female, aged 16-90 years, mean age 57.66 ± 15.69 years. Most frequent risk factor identified was malignancy (59%) including cholangiocarcinoma, adenocarcinoma of lung, and hepatocellular carcinoma. Others were immobilization, neurological paralysis, and recent surgery. Unprovoked APE was found in 16.67% of the patients. Most common presenting symptoms and signs were dyspnea (85.33%) and asymptomatic (11.67%), tachycardia (HR>110/min) (33.73%), and tachypnea (RR>30/min) (31.67%). Regarding EKG findings, sinus tachycardia was found in 67%, followed by normal EKG (22%) (all patients survived at 1 month), and S1Q3T3 (17.33%). Chest radiography findings were mostly normal (38.67%), with lung metastasis in advanced malignancy (17.67%). Overall mortality at one month was 27%. Mortality (PE-related death) at one month of each group of PESI score (class I = 0%, class II =5.35%, class III = 5%, class IV = 12.76% and class V = 52.27%). In patients with simplified PESI score = 0, one month mortality was 0%, while 31.9% in patients with sPESI > 1. PaO2/FiO2 ratio (PF ratio) < 150 was a significant predictor for bad outcome, with PF ratio = 1-50 (RR 17.21, p<0.05), PF ratio = 51-100 (RR 12.76, p<0.05), and PF ratio = 101-150 (RR 6.09, p = 0.007).

Conclusion: The PESI and sPESI are correlated with 30-day mortality. They represent a reproducible scoring tool to stratify risks in patients with acute PE.

Keywords: Acute PE, PESI, sPESI