Different impact of each score component in the simplified PESI score on acute mortality of patients with pulmonary embolism in the era of direct oral anticoagulant


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Background: The simplified pulmonary embolism severity index (sPESI) score could help the risk stratification of acute mortality in patients with pulmonary embolism (PE) including identification of low-risk patients for outpatient treatment. The sPESI score consisted of six components such as age, history of cancer, history of chronic cardiopulmonary disease, heart rate, systolic blood pressure (sBP), and O2 saturation. However, the prognostic impact of each score component on acute mortality has not been fully evaluated in the era of direct oral anticoagulant (DOAC).

Methods: The COMMAND VTE Registry-2 is a multicenter registry enrolling 5,197 consecutive acute symptomatic venous thromboembolism (VTE) patients among 31 centers in Japan between January 2015 and August 2020. In the current study, we evaluated 927 PE patients with the sPESI score 1, and investigated the impact of each score component on acute mortality and detailed causes of deaths.

Results: The distribution of score components of sPESI score were as follows; 80 years or older: 128 patients (14%), history of cancer: 353 patients (38%), history of chronic cardiopulmonary disease: 91 patients (9.9%), heart rate over 110 bpm: 72 patients (7.8%), sBP under 100 mmHg: 18 patients (2.0%), and O2 saturation under 90%: 258 patients (28%). Among the current study population, 736 patients (79%) developed PE out of hospital, and a majority of them (83%) admitted to the hospital with a median length of hospital stay of 14 days. The cumulative 30-day incidence of all-cause death was 2.1%, and the proportions of mortality varied widely depending on different score component of the sPESI (80 years or older: 0.8%, history of cancer: 4.6%, history of chronic cardiopulmonary disease: 1.1%, heart rate over 110 bpm: 0%, sBP under 100 mmHg: 0%, and O2 saturation under 90%: 0.4%). Among all-cause death events, PE-related deaths accounted 1 in patients with history of cancer, 1 in those with history of chronic cardiopulmonary disease, and 1 in those with O2 saturation under 90%.

Conclusions: The risk of acute mortality in patients with sPESI score 1 was relatively low in the era of DOAC, although that could vary widely according to each score component of the sPESI score, which could be useful for the further risk stratification among these patients.