Clues to early death from symptomatic pulmonary embolism in subjects presenting as outpatients

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Some mistakenly consider pulmonary embolism (PE) a benign disease with an excellent prognosis. But nothing could be further from the truth. In a large registry of 2,454 consecutive PE patients with no exclusion criteria, the all-cause mortality rate was 17% at three months.

PE requires risk stratification to determine prognosis. The fundamental procedure to predict outcome necessitates assessment of clinical factors, right ventricular size and function, and cardiac biomarkers such as troponin.

Most outcome studies of PE patients have investigated primarily patients who were hospitalized with other conditions and then developed PE. Therefore, the study featured in this issue of *Thrombosis and Haemostasis* by Conget et al. (4) is especially enlightening. These investigators follow a large cohort of 1,338 patients who developed symptoms and signs of PE prior to hospitalization. Thus, their focus is on community acquired PE, where three-fourths of cases of venous thromboembolism originate (5). Emergency Medicine physicians at eight Spanish hospitals facilitated this unique collaboration. They recruited consecutive outpatients who presented to their Emergency Departments, were diagnosed with PE, and required hospitalization.

Important observations are plentiful in this memorable study. First, PE is an illness of all ages, with a range in this cohort between 17 years and 96 years. Second, the all-cause mortality was high: 10.6% at three months. About one-third of the deaths were ascribed to PE, and probably other PE cases were incorrectly categorized as respiratory failure or sudden cardiac death. The high death rate and frequent major bleeding complications during the first week will certainly give pause to advocates of early hospital discharge for PE: 36 of the 40 deaths due to PE occurred during the first week after diagnosis. And of 48 patients with major bleeding, 21 events occurred during the first week. Nine of 13 deaths from major bleeding occurred during the first week after PE diagnosis.

It is no surprise that systemic arterial hypotension was an independent risk factor for short-term mortality. An unexpected finding was that four or more days of immobility due to medical illness was strongly associated with early death.

One would have hoped that in this registry, the death rate would have plummeted compared with the PIOPED I cohort (6) or the MAPPET population (7). Those cohorts were published in an earlier era. However, it is humbling to note that the death rates and especially early mortality due to PE were similar in all three studies.

What are the clinical implications of this observational trial? First, I will personally be less of an enthusiast for completely outpatient management of PE. After all, to maximize my patients’ likelihood of event-free survival, I want them to be treated in-hospital until any ominous features of their presentation have stabilized. I will be especially reluctant to advocate early discharge in PE patients who presented with hypotension or who were immobile because of medical illness. And this study will push me to be a little more aggressive with thrombolysis, embolectomy, or insertion of inferior vena caval filters, especially when I encounter patients in the “grey zone” who have ominous prognostic features but who could be theoretically be managed with anticoagulation alone. This latter group of patients might include those with the following profile: immobility due to heart failure or pulmonary disease, moderate right ventricular enlargement on chest CT (8), moderate right ventricular hypokinesis on ECHO (9), and a “troponin leak.” For reminding us that PE remains deadly, we are indebted to Conget and colleagues.
References