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Prognostic Significance of Deep Vein Thrombosis in Acute Pulmonary Embolism

In a recent issue of the *Journal*, Jimenez and coworkers reported that the risk of early death among patients with acute symptomatic pulmonary embolism (PE) is four times higher in those who present with concomitant lower limb deep vein thrombosis (DVT) than in those with no evidence of DVT on compression ultrasonography (CUS) (1). Based on their findings, the authors suggest using CUS for prognostication and risk stratification in patients with acute PE.

In that study, the estimated risk of early death associated with concomitant DVT was adjusted for potential confounders such as age, comorbid conditions (cancer), intensity of anticoagulation, fibrinolytic therapy, or insertion of vena cava filters (1). Surprisingly enough, however, the authors did not include, among the independent variables, the extent of pulmonary clot burden at the time of PE diagnosis.

In a long-term follow-up study comprising 834 consecutive patients with clinically suspected PE, we observed that the extent of pulmonary vascular obstruction at diagnosis is a strong independent predictor of short-term survival in patients with acute PE (2). Of the 320 patients with angiographically proven PE (38% of the inception cohort), 120 had a pulmonary vascular obstruction greater than 50%. In these patients, the adjusted hazard of death within 24 hours of diagnosis was eightfold higher than in patients in whom the diagnosis of PE had been excluded taken as the reference category. The cumulative hazard ratio of death decreased to 4.0 at 1 week (95% confidence interval, 1.7–9.8; $P = 0.002$ versus reference category) and 2.1 (95% confidence interval, 1.1–4.2; $P = 0.032$) at 1 month of diagnosis.

By contrast, the adjusted odds of death in patients with PE and vascular obstruction less than 50% were not significantly different, at any time after diagnosis, from those of patients without PE (2).

In a recent study, including 497 consecutive patients with an established diagnosis of PE, the severity of pulmonary vascular obstruction, as assessed on lung scintigraphy, was a significant, independent predictor of PE recurrence and PE-related death (3).

The pulmonary clot burden can be reliably assessed by contrast-enhanced helical CT (4) or estimated indirectly by the number of perfusion defects on lung scanning (5).

In our opinion, assessment of the pulmonary clot burden should be implemented in clinical practice for risk stratification and therapeutic management of patients with acute PE.

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Mortality-Risk Profiling using Doppler Leg Scans in Patients with Pulmonary Embolism

To the Editor:

It is with great interest that we read the work published by Jimenez and colleagues proposing detection of a concurrent lower limb deep vein thrombosis (DVT) as an important additional marker of mortality risk in patients with pulmonary embolism (PE) (1). In this respect, the use of lower limb Doppler ultrasound (USS) in patients with PE has previously been shown to have a positive predictive value at 75% and specificity at 97% reducing the need for more invasive imaging (2, 3). Despite these outcomes, with a common pathway of usual treatment regardless of findings at diagnosis, then, the concern in the UK is that to adopt the findings of Jimenez would require an actual change of practice and, furthermore, would not necessarily confer an economic benefit. Prompted by the study findings (1), we have undertaken a post hoc analysis of patients initially investigated and provisionally reported (4) for mortality risk using the pulmonary embolism severity index (PESI) criteria (5) in this hospital. In the year ending December 2007, 83 (33%) of 252 patients undergoing computed tomography pulmonary angiogram (CTPA) had a confirmed PE, and of these, only 16 (19%) had also undergone a USS; this included only 9 who underwent a USS concomitantly with the CTPA (only one positive DVT) with a further 7 who were scanned for whatever reason in the subsequent 12 months (all positive for DVT). All-cause mortality in patients with proven concomitant DVT was 12.5% ($n = 2/16$) with both these patients diagnosed with DVT later during the 12-month period. We believe our investigation rates into concurrent lower limb venous thrombosis is similar to other institutions in the UK and hence propose that routine imaging of lower limbs to document DVT at a time where PE diagnosis has already been established will require substantial change in practice with impact on resources.

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