

LETTERS TO THE EDITOR

Diagnosis of Pulmonary Embolism by Computed Tomographic Pulmonary Angiography

Dear Editor: I read with great interest the article by Jiménez et al¹ on the trustworthiness of a negative result of single-slice computed tomographic angiography (CTA) when deciding to withhold anticoagulation therapy in patients who visit the emergency room with suspected pulmonary embolism. Their retrospective study calculated the 3-month recurrence rate to be 35% (95% confidence interval [CI], 26%-45%), which is surprisingly high if we compare this figure with findings from similar studies. Thus, 2 prospective multicenter studies^{2,3} found a 3-month recurrence rate of 1.8% (95% CI, 0.8%-3.3%) and 0.4% (95% CI, 0%-2.2%), respectively, in patients with clinically suspected pulmonary embolism and a negative single-slice CTA who did not receive anticoagulation therapy. However, in both those studies, a Doppler ultrasound of the lower limbs was included in the diagnostic procedure. In our hospital, the findings of a study⁴ of 93 patients admitted consecutively for suspected pulmonary embolism who underwent Doppler ultrasound only if they had signs or symptoms of deep vein thrombosis (DVT) were similar to those mentioned above: a 3-month recurrence rate of 1.1% (95% CI, 0.03%-6.2%). Furthermore, the meta-analysis by Moores et al⁵ calculated the 3-month recurrence rate to be 1.4% (95% CI, 1.1%-1.8%). Jiménez et al¹ attempt to explain the difference between their findings and those of other researchers by claiming that the latter are only applicable in populations where DVT can be simultaneously ruled out by Doppler ultrasound. As we understand it—the methods section is somewhat confusing—Jiménez et al did not systematically request Doppler ultrasound. However, the authors do then say that, although diagnostic guidelines for pulmonary embolism recommend that additional diagnostic tests be carried out for patients with negative helical CT angiograms, this was not done in over half the cases in our setting. No mention is made of whether these additional tests were scintigraphy, angiography, or Doppler ultrasound, or of the number of cases in which any of these techniques was applied. If no patient underwent a Doppler ultrasound, what diagnostic procedures were used in those patients with suspected pulmonary embolism in the emergency room and symptoms of DVT? Was anticoagulation therapy withheld because of the negative CTA result without ruling out DVT by further radiological tests? A recent study⁶ calculated that DVT was clinically present in 32% of all patients with pulmonary embolism; therefore, it is reasonable to assume that some of the patients in the study by Jiménez et al¹ could be in this situation. If Doppler ultrasound was only performed in selected patients, both the number and criteria used should be specified.

It is also worthy of note that the number of patients with a high clinical probability of pulmonary embolism (74%) is much greater than that found in similar studies. The authors explain that each of the patients' medical histories was reviewed to determine the probability of their having a pulmonary

embolism according to the scoring system described by Wells and colleagues, which classifies patients into low, intermediate, and high clinical probability groups. Any patient whose probability could not be measured was assigned to the low probability group. Given that very few patients fell into this category (3%), we can venture that the investigators were able to establish the clinical probability in almost all the cases. However, the Wells scale is only useful before diagnostic testing, since it determines the pretest probability of presenting the condition. Furthermore, it includes an item (pulmonary embolism more probable than an alternative diagnosis) that is purely subjective (with the result that this scale has often been criticized) and must be evaluated by the initial attending physician.

Finally, it must be stressed that recurrence was diagnosed using Doppler ultrasound (but without specifying whether the initial examination was normal and so there was no information on whether DVT was already present) or by ventilation-perfusion scintigraphy according to the criteria of the Prospective Investigation of Pulmonary Embolism Diagnosis (PIOPED) study,⁷ which concluded that a high probability was associated with a definitive diagnosis of pulmonary embolism established by angiography in only 88% of cases. The most reasonable approach would have been to use the same method used originally to rule out pulmonary embolism, namely CTA, and turn to angiography when this was negative and the clinical picture persisted. It does not seem very logical to confirm recurrence with a test (scintigraphy) that has proven to be less specific than the one being evaluated.

To conclude, I think we should be glad that hospitals evaluate the results they obtain in the difficult process of diagnosing pulmonary embolism and, in this sense, the work of Jiménez et al¹ is worthy of praise. However, when the findings differ so much from other published studies, only 2 explanations are possible: methodological errors, as is the case here, or technical problems during the CTA.

Luis Alejandro Pérez de Llano

Unidad de Endoscopia, Hospital Xeral, Lugo, Spain

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