

Pulmonary Embolism Ruled Out in Error

A 28-year-old man presented to a Maryland hospital emergency department (ED) with a two-day history of low-grade fever, nonproductive cough, and dizziness. He was also tachycardic and significantly hypoxic. After an hour's wait, the patient saw an emergency physician, who noted complaints of weakness, shortness of breath, and lightheadedness. The differential diagnosis included pneumonia, congestive heart failure, and pulmonary embolism (PE).

After an ECG, chest x-ray, and blood work, the emergency physician diagnosed pneumonia and renal insufficiency. The patient was admitted but within eight hours of arrival at the ED was transferred to another hospital. The admitting physician at the second hospital did not evaluate the patient on admission.

Almost five hours later, the patient got out of bed and collapsed in the presence of his wife. A code was called, but the man never regained consciousness and was pronounced dead about 90 minutes later. An autopsy confirmed a PE as the cause of death.

Plaintiff for the decedent alleged negligence in the clinicians' failure to diagnose and treat the PE. The plaintiff claimed that with proper treatment, the patient would have survived.

Commentary by **David M. Lang, JD, PA-C**, an experienced PA and a former medical malpractice defense attorney who practices law in Granite Bay, California. Cases reprinted with permission from *Medical Malpractice Verdicts, Settlements and Experts*, Lewis Laska, Editor, (800) 298-6288.

The defendants argued that there was no negligence involved and that heparin therapy would not have prevented the patient's death.

OUTCOME

According to a published account, a \$6.1 million verdict was returned.

COMMENT

This is a substantial verdict, reflecting the jury's revulsion at the loss of a 28-year-old patient. His initial presentation of low-grade fever, nonproductive cough, and dizziness with tachycardia and hypoxia could be consistent with either pneumonia or PE. The facts as presented render the chest x-ray findings and the magnitude of hypoxia unclear. We also are not told whether any specific risk factors existed to make PE more likely, nor whether there was evidence of deep vein thrombosis (DVT) during presentation or at autopsy.

Diagnosing PE can be difficult. However, jurors confronted with a case involving a fatal PE may be led to believe that the diagnosis is straightforward and should never be missed. Plaintiff's counsel will argue that the patient "would be standing here today" in a fully functional status if the diagnosis had been made.

Here, presumptively, the chest films and chest auscultation were suggestive of pneumonia and led the clinician, who actively considered PE, to ultimately exclude the possibility. It is not clear why the

patient was transferred and not formally evaluated upon arrival at the second hospital, but the facts indicate that the patient was "significantly hypoxic." This should have entailed close monitoring by the receiving clinician, irrespective of the diagnosis.

The pathophysiology of PE is straightforward—but the presentation is often variable and non-specific and the diagnosis tricky. Thus, for the clinician confronted with a hypoxic patient, it is important to consider this diagnosis early and thoroughly. Evaluate for risk factors: *hypercoagulability*, as in cases of malignancy, estrogen use, pregnancy, antiphospholipid syndrome (Hughes syndrome), or genomic mutations (eg, factor V Leiden mutation, prothrombin mutation, factor VIII mutations, protein C and protein S deficiency); *venous stasis*; and *vascular endothelial damage*, as possibly occasioned by hypertension or atherosclerotic disease.

In addition, it is important to confirm the presence or absence of a DVT. Follow evidence-based rules, such as the Wells score, to guide decision making. In *Wells scoring*, points are assigned for each of seven criteria, allowing the patient to be categorized by high, moderate, or low probability for PE. The Wells scoring criteria comprise

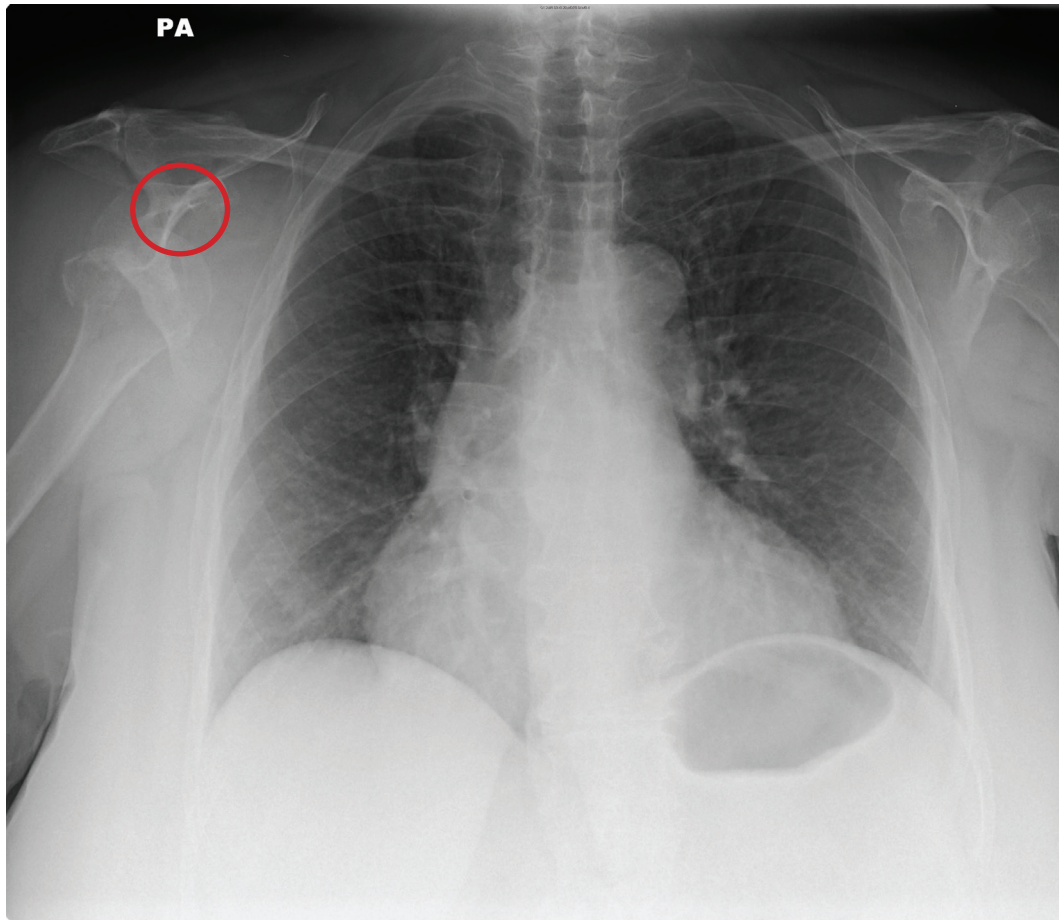
- Suspected DVT (3 points)
- PE the most likely diagnosis, or equally likely as a second diagnosis (3 points)
- Tachycardia (heart rate > 100 beats/min; 1.5 points)

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ANSWER

The radiograph shows a normal-appearing chest. Of note, though, is an anterior dislocation of the right shoulder. In addition, there is a fracture within the greater tuberosity of the right humerus.

Prompt orthopedic evaluation is obtained. In further discussion with the family, it was revealed that the patient had been experiencing falls recently; this injury was most likely the result of one. **CR**



MALPRACTICE CHRONICLE

- Immobilization for at least three days or surgery within the previous four weeks (1.5 points)
- History of DVT or PE (1.5 points)
- Hemoptysis (1 point)
- Malignancy with treatment within previous six months (1 point)

Patients with a total score exceeding 6 points are considered high-probability for PE and

should undergo multidetector CT. Those with a score of 2 to 6 have moderate probability and should undergo high-sensitivity D-dimer testing; negative D-dimer results exclude PE and positive results warrant multidetector CT and lower-extremity ultrasound. In low-probability patients (Wells score below 2) with negative D-dimer results, PE is excluded; if D-dimer results are positive, multidetector CT should be ordered.

IN SUM

Extensive discussion of clinical predictive rules, diagnostic modalities, and treatment is beyond the scope of this comment. But clinicians should apply evidence-based decision-making rules to establish a diagnosis. And it should be apparent that hypoxic patients warrant close monitoring—particularly when a change of provider, service, or institution occurs. —DML **CR**