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Case: Evaluation and Diagnosis of VTE

Announcer:

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Dr. Narcisse:

Hello, everyone, my name is Dennis Narcisse. I'm a Cardiology Fellow at Duke University Hospital, and I'm going to be talking through two cases today about evaluation and diagnosis of venous thromboembolism.

So, here we have Case 1. This is a 64-year-old male referred to the emergency department for suspected DVT. He's got active cancer with treatment with pelvic node involvement, and he's got a pretest probability that's high for DVT. His exam was only remarkable for lower extremity symptoms. And his initial imaging was negative and did not demonstrate evidence of DVT. So, that leads us here thinking: What's next?

And I think here, we'll turn to the guidelines to guide us on next steps. So, in the right frame, we have management of high pretest probability. And in those patients, we skip or forego the D-dimer testing and go straight to imaging with a lower extremity ultrasound and compression. And if that's positive, then you have the diagnosis of DVT, and can proceed to treatment. If that's negative, and you have an extremely high pretest probability, I think it's important to remember that these tests are not 100% accurate. And if you have a high pretest probability with a not 100% test, then guidelines do recommend serial ultrasounding even if the initial testing is negative in a high pretest probability patient.

When you're determining if a patient is low pretest probability, then that is when upfront D-dimer is used for evaluation for DVT. If that's negative, then you've ruled out the diagnosis. And if that's positive, then you proceed to imaging, and ultimate treatment if the imaging is positive. I left off indeterminate here, and it's really similar to high pretest probability, except you would not do serial ultrasounding.

So, in summary, for evaluation and diagnosis of DVT, utilizing pretest probability is crucial in these patients to guide management. In patients with high pretest probability and negative initial ultrasound, then serial imaging is indicated to fully exclude DVT. And in low pretest probability patients, it's important to use D-dimer first to exclude DVT.

So, in our second case, we have a 72-year-old female, history of COPD and other comorbidities who's presenting with acute chest pain and shortness of breath over the last 12 hours. She's got sinus tachycardia on her exam, but sitting well. And I think some important considerations here prior to the evaluation for this patient, is that her pretest probability is moderate or intermediate by Wells score, and she has a history of lung disease, and I'll explain why that's important.

So here, utilizing the Wells score, you bucket your patients into low or indeterminate versus high when you're evaluating for PE. When you have low or indeterminate, that is when you use D-dimer for the initial testing. Important consideration for D-dimer is that in hospitalized patients, postsurgical, or pregnant patients, it often has low utility even in low pretest probability patients. But if it's negative in others, it rules out PE. And if it's positive, then you should go on to subsequent imaging. In high pretest probability patients, you

should use upfront CT angiography of the pulmonary arteries for highest accuracy. And if that's negative, and you have a high pretest probability, you should consider alternative imaging.

An important consideration in PE is V/Q scan or CTPA. V/Q scans require normal chest x-ray and no history of lung disease for highest accuracy. And it's best for young patients or pregnant patients because of the low radiation. But indeterminate testing or non-diagnostic scans still require CTPA. CTPA is highest accuracy, it has the highest sensitivity and specificity for diagnosing PE. And it can look at other characteristics in the scan outside of just the pulmonary arteries, but it does have high radiation and it's more widely available.

So, in summary here, scoring system to calculate pretest probability should be used and utilized in conjunction with clinical gestalt. In patients with low or indeterminate pretest probability, high-sensitivity D-dimers can be used upfront to safely exclude PE without additional testing. CTPA, or the CT of the pulmonary arteries, is preferred imaging modality in high pretest probability patients who are likely to have nondiagnostic V/Q results.

Thank you so much for your time and attention.

Announcer:

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