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The Clinical Picture

A 67-year-old woman with sudden onset of chest pain and dyspnea

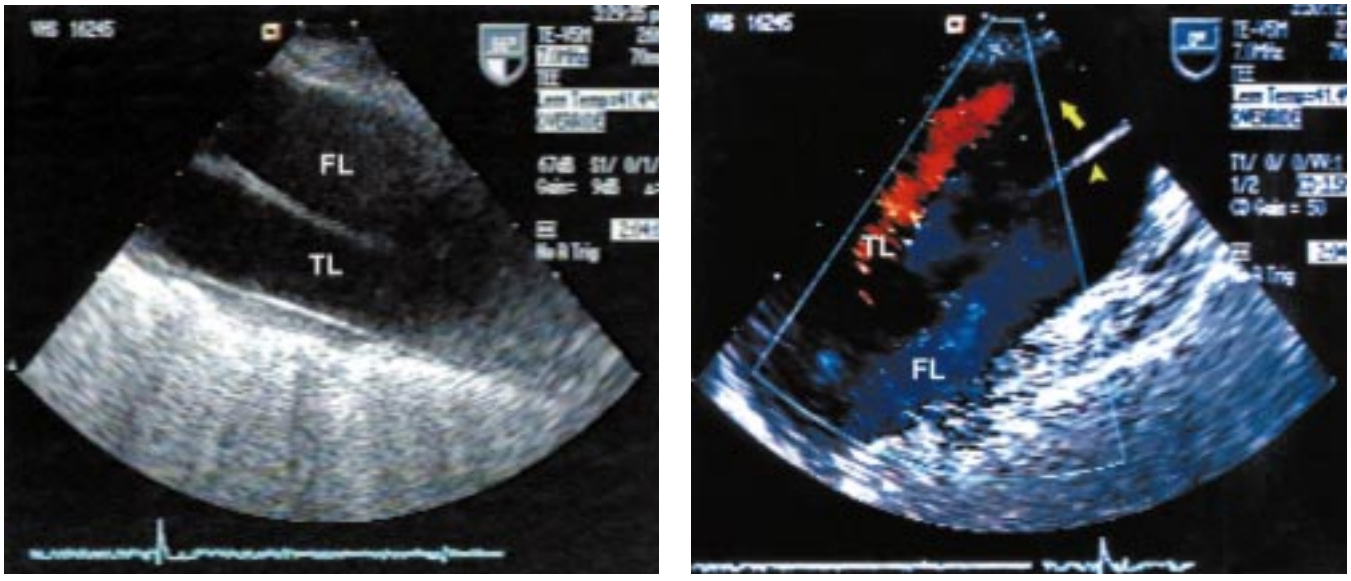

FIGURE 1. The aortic arch (left) with a flap separating the true lumen (TL) from the false lumen (FL). Ascending aortic arch (right) shows forward flow (red) in the true lumen (TL) and regurgitant flow (blue) in the false lumen (FL) by color flow Doppler ultrasound. The intimal flap can be seen separating the true lumen from the false lumen (arrow) and extending into the false lumen (arrowhead).

A 67-YEAR-OLD WOMAN presented with the sudden onset of retrosternal chest pain and dyspnea at rest. Two months earlier she had been diagnosed with deep venous thrombosis. The physical examination revealed profound hypotension, respiratory distress, unequal upper-extremity pulses, and a loud brief diastolic decrescendo murmur at the left upper sternal border. Her oxygen saturation was 84%. Chest radiography showed the lung fields, mediastinum, and cardiac silhouette to be normal. Electrocardiography revealed sinus tachycardia with an incomplete right bundle branch block. Transthoracic echocardiography revealed normal left ventricular systolic function, but it also revealed moderate to severe right ventricular dysfunction, mild aortic regurgitation, and a small pericardial effusion, conditions which apparently developed since the prior transthoracic echocardiogram.

DOES THE PATIENT HAVE AN AORTIC DISSECTION OR A PULMONARY EMBOLISM?

The patient's clinical course has features of both pulmonary embolism and aortic dissection. Both disorders may present with sudden onset of chest pain, though the chest pain of pulmonary embolism is classically pleuritic, and that of aortic dissection is classically maximal at onset, tearing, and migratory. Hypotension and hypoxemia may occur in either. The pulse deficit and murmur of aortic regurgitation strongly support aortic dissection. Based on the clinical presentation, aortic dissection was the suspected diagnosis and transesophageal echocardiography (TEE) was performed (FIGURES 1-3).

TEE revealed a type A aortic dissection (ie, in the ascending aorta) with severe aortic regurgitation and a

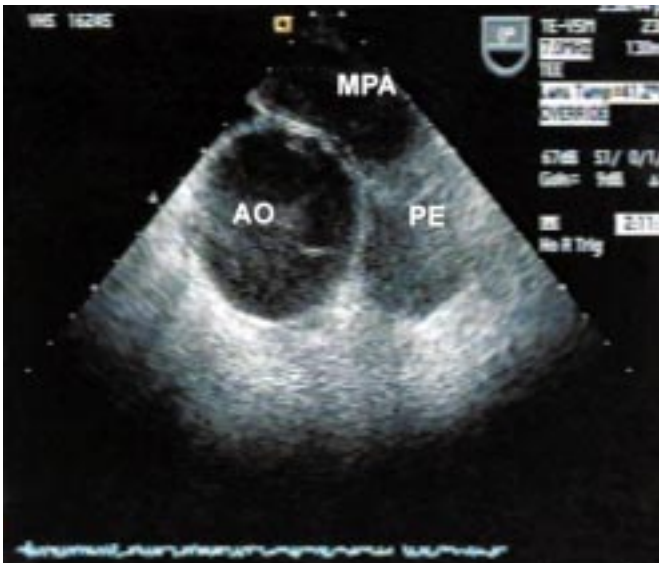

FIGURE 2. Aorta (AO) with obstruction of main pulmonary artery (MPA) by pulmonary embolus (PE).

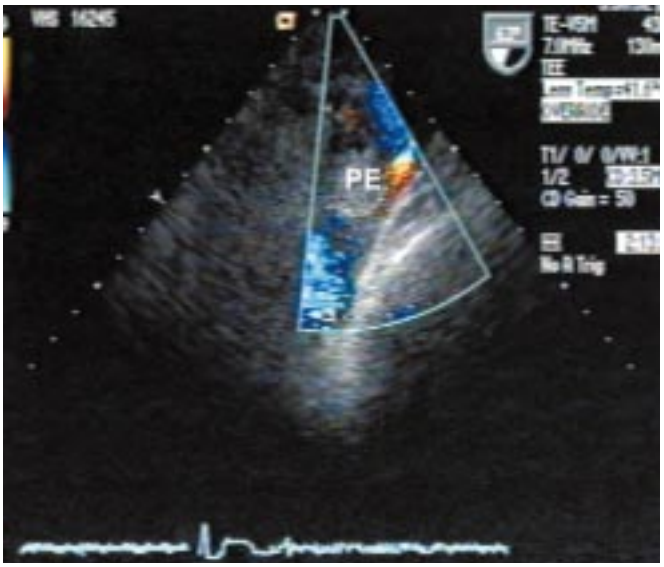

FIGURE 3. Pulmonary embolus in the main pulmonary artery, and flow around it by color Doppler.

large pulmonary embolus in the main pulmonary artery. Given the patient's profound hemodynamic derangements, she was deemed a poor candidate for surgery, and she died shortly thereafter, despite maximal supportive care.

DETECTING AORTIC DISSECTIONS

Computed tomography has emerged as the initial imaging procedure of choice in most patients (61%) with suspected aortic dissection.[1] It is highly sensitive and specific, it can provide diagnostic images quickly, and it is available close to many emergency rooms.

TEE is also a valuable tool in the diagnosis of aortic dissection, and it is the initial imaging procedure in 32.7% of patients with aortic dissection and in 42.2% with type A dissection.[1,2] In addition to its ability to define the location of the intimal tear and flow in the true and false lumens, TEE reliably identifies complications of aortic dissection, such as pericardial tamponade, aortic valve regurgitation, and, frequently, ostial involvement of the coronary artery. TEE also allows for bedside evaluation and avoids the need for lengthy transfers of critically ill patients, such as this patient, to radiology suites.

Magnetic resonance imaging is rarely used as the initial imaging procedure (1.8% of cases).[1]

TEE is not sufficiently sensitive to diagnose pulmonary embolism; however, in this case TEE did reveal the somewhat unexpected finding of a hemodynamically significant pulmonary embolus. TEE may visualize very large proximal thrombi and may provide important hemodynamic information in patients with pulmonary embolism; however, except in unusual circumstances, it does not have a role in the diagnosis of suspected acute pulmonary embolism.[3]

REFERENCES

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