



Hyperdensities within the pulmonary arteries

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A 55-year-old woman presenting with a two-year history of breast cancer and undergoing chemotherapy reported acute-onset severe chest pain and dyspnea. An unenhanced chest CT scan showed normal lungs and areas of increased density in the pulmonary arteries. An intravenous contrast-enhanced chest CT scan showed thrombi in pulmonary artery branches (Figure 1).

Pulmonary embolism (PE) is a common life-threatening condition that is associated with high morbidity and mortality. In patients with acute PE, however, nonspecific symptoms are common, and prompt recognition of PE can be challenging. Early diagnosis and prompt, appropriate treatment are essential to prevent further complications. Clinical findings alone are not sufficient to establish a diagnosis of PE, imaging therefore playing a critical role in the diagnostic workup of PE. CT angiography is the method of choice for the diagnostic imaging of PE and can safely exclude it. Pulmonary arterial filling defects on CT angiography play a critical role in establishing a diagnosis of PE. In addition, CT allows evaluation of the lung parenchyma, mediastinum, and pleural cavity with excellent spatial resolution, making it possible to assess alternative diagnoses.^(1,2)

Unenhanced chest CT scans are commonly performed in patients presenting with nonspecific acute cardiopulmonary symptoms. Therefore, indirect signs of pulmonary thromboembolism are crucial in prompting the need for ancillary tests for a timely diagnosis.

Identification of indirect signs of PE is important in a variety of situations, especially when PE is not clinically suspected, and can be critical in preventing delayed diagnosis and complications. Unenhanced chest CT findings of thrombi in the pulmonary arteries have been described as an important CT sign of PE (particularly central PE), with the thrombi seen as hyperattenuating material on CT scans. The hyperdense appearance of the thrombus is due to increased hemoglobin concentration caused by decreased water content as the thrombus retracts, its attenuation value being raised above that of the regional blood pool. Despite being an important indirect sign of central PE, the presence of hyperdense material within the pulmonary arteries has limited diagnostic value for peripheral PE.^(1,2)

Our patient initially underwent unenhanced CT, which showed hyperdense areas in the main pulmonary arteries. A contrast-enhanced CT scan was then performed, confirming the diagnosis of PE.

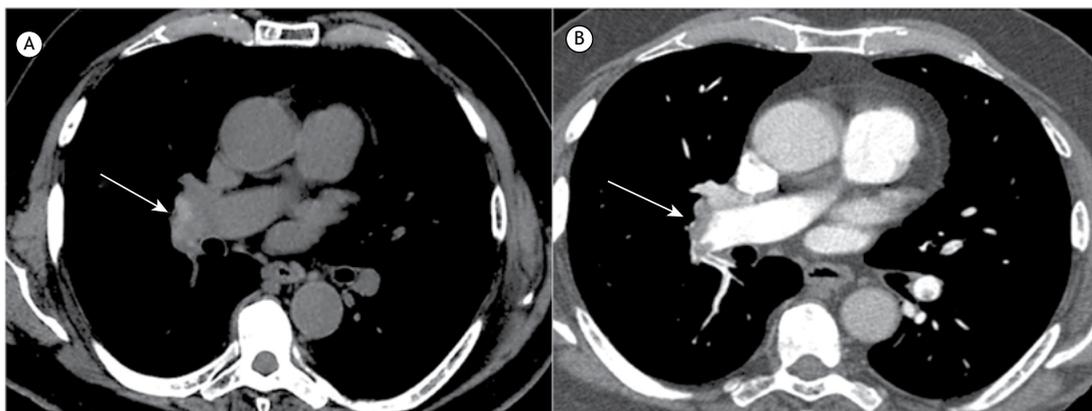


Figure 1. In A, unenhanced CT scan of the chest (mediastinal window) showing hyperdense material present within the right pulmonary artery (arrow). In B, chest CT angiography confirmed the finding to be a thrombus (arrow). Note also a small thrombus in a segmental branch of the left pulmonary artery (in B).

REFERENCES

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