Pulmonary infarction in acute pulmonary embolism: reversed halo sign

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DESCRIPTION

A 24-year-old female patient was admitted with symptoms of right lower limb swelling, shortness of breath and dry cough of 1 week duration. There was no history of fever, chest pain, oral contraceptive use, smoking or underlying malignancy. On examination, heart rate was 100 beats per minute, respiratory rate was 24 breaths per minute while other vital signs and systemic examinations were normal except for swelling in the right lower limb. Oxygen saturation on room air was 94%. ECG showed sinus tachycardia. Lower limb ultrasound Doppler examination confirmed right lower limb deep venous thrombosis (right proximal femoral vein with extension into the right superficial femoral vein). Transthoracic echocardiography was normal. Chest radiograph showed a peripheral subpleural wedge-shaped opacity in the right midzone. CT pulmonary angiography (figure 1) demonstrated thrombus in right main pulmonary artery branches with features of 'reversed halo sign' (RHS) in the wedge-shaped opacity confirming the diagnosis of distal pulmonary infarction. The patient was treated with a therapeutic dose of low-molecular-weight heparin, improved and was discharged on oral anticoagulants.

RHS denotes a focal, rounded area of ground-glass opacity surrounded by a complete or nearly complete ring of consolidation on high-resolution CT thorax examination as was seen in our patient.¹ Previously considered to be specific for cryptogenic organising pneumonia, the sign has been described in a wide variety of infectious and non-infectious conditions such as pulmonary fungal infections, pulmonary infarction, granulomatosis with

polyangitis, tuberculosis, sarcoidosis, pneumocystis pneumonia, etc.² In our patient, presence of thrombus in the pulmonary artery branches with RHS in the pulmonary opacity clinched the diagnosis. RHS, although a non-specific sign, can help in narrowing down the list of differential diagnosis. Final diagnosis should be made in conjunction with all the other ancillary investigations.

Learning points

- ▶ Reversed Halo Sign is associated with a number of infectious and non infectious etiologies.
- ▶ Cryptogenic organising pneumonia is the most common condition associated with reversed halo sign.
- ▶ Reversed halo sign in the pulmonary parenchyma in a patient with pulmonary embolism points towards pulmonary infarction.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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Figure 1 CT of the thorax showing filling defect in the right pulmonary artery segments (yellow arrow). Also seen is a pulmonary parenchymal wedge-shaped opacity with denser peripheral rim with less dense central content (white arrow). Reversed halo sign is seen in the lung window sections (right panel), area of consolidation surrounding a region of ground glass opacity in the wedge-shaped opacity (pulmonary infarct).

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