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Images in Clinical Medicine

Westermark's sign in pulmonary embolism

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A 61-year-old man with peripheral arterial occlusive disease presented to the hospital with progressive dyspnea and right-side chest pain for 2 months. On arrival, he was in respiratory distress and his initial oxygen saturation was 92% under room air. Chest radiography showed oligemia distal to the right pulmonary trunk (Westermark's sign; Fig. 1A, arrow). Computed tomography angiography demonstrated a massive pulmonary embolism (PE) trapped in the right pulmonary trunk (Fig. 1B, arrow) with ground glass opacities, suspected to be an impending lung infarction (Fig. 1C, arrow). An electrocardiogram disclosed an S wave in lead I, and a Q wave and inversed T wave in lead III (S1Q3T3 pattern; Fig. 1D). His clinical symptoms subsided gradually after administration of low-molecular-weight heparin in combination with warfarin. PE is a life-threatening and underestimated disease. Clinicians should be very cautious when approaching a patient with dyspnea or chest pain, as PE can result in significant morbidity and mortality if not diagnosed promptly. Our case demonstrates a range of classic findings of PE, including Westermark's sign on chest radiography and an S1Q3T3 pattern on electrocardiography. Westermark's sign represents occlusion of the pulmonary vessels resulting in lung infarction. It was first described by Neil Westermark as 'anemic' or oligemic peripheral regions of lung parenchyma shown by 'wedge-shaped shadows' [1]. It has low sensitivity but high specificity, which means that Westermark's sign is strongly suggestive of PE, but its absence cannot rule it out [2]. Computed tomography angiography can help whenever PE is highly suspected clinically.

References

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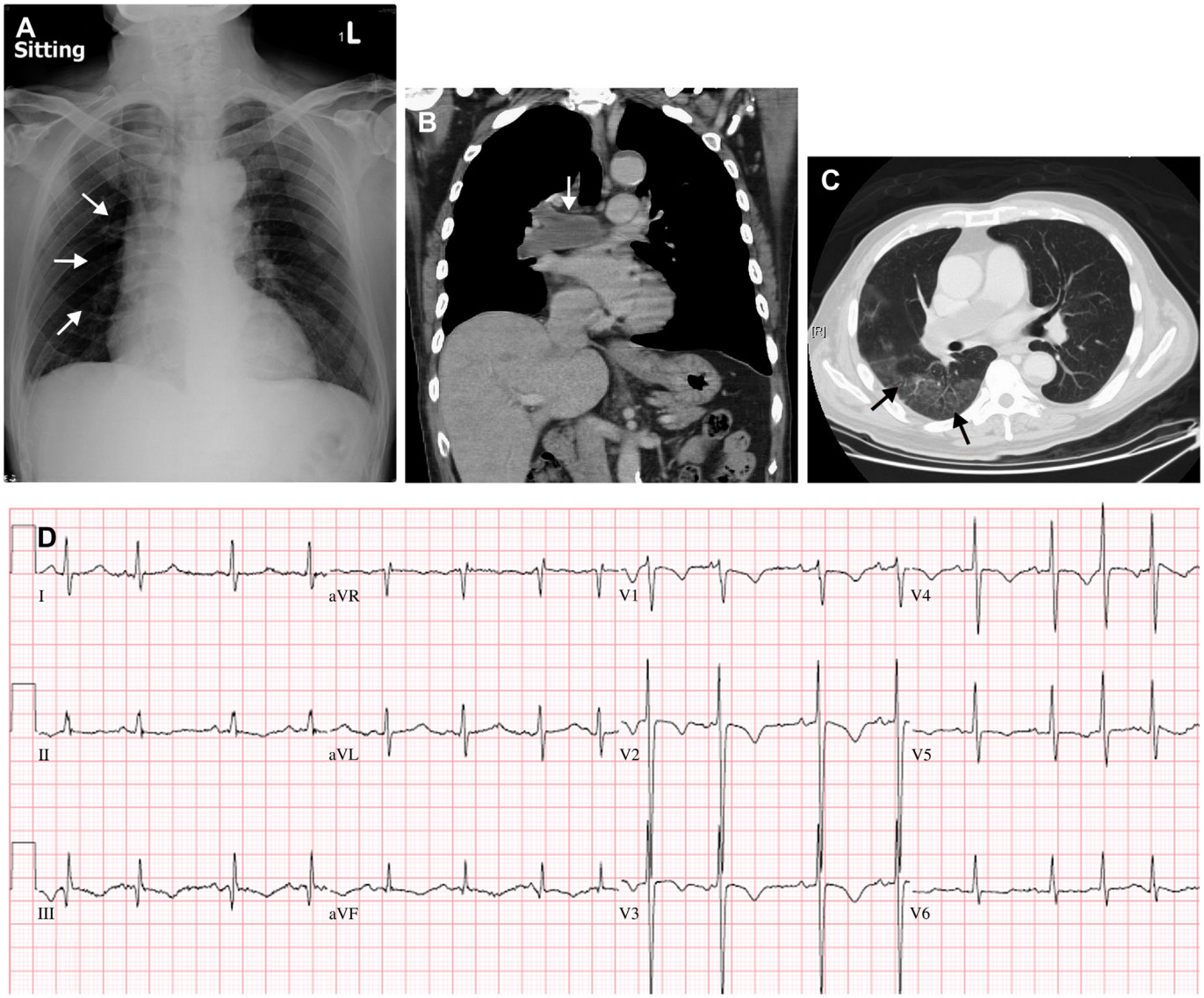

Fig. 1. (A) Anteroposterior chest radiography. (B) Coronal computed tomography angiography. (C) Transverse computed tomography angiography in the lung window. (D) Electrocardiogram (S1Q3T3 pattern).