Westermark's Sign of Pulmonary Embolism
Well Known but Frequently Overlooked

Abstract:

Sir

Pulmonary embolism (PE) is frequently a difficult diagnosis because of non-specific symptoms that can lead to misdiagnosis. We report a patient with PE successfully diagnosed and treated, whose CXR showed Westermark's sign of pulmonary embolism. Westermark's sign is distal oligemia in the affected area of the lung due to a reduction in size of vessels distal to a PE. It has a low sensitivity (14%) and high specificity (92%) for the diagnosis of pulmonary embolism. Its high specificity for PE makes it a sign well worth being aware of and in this case described its early recognition may lead to early treatment and to prevention of cardiovascular insult.

A 35 year old male, with a non-smoking history was admitted from emergency department (ED) for care of shortness of breath and right sided chest pain, which he had noticed first two days ago. His father had died of a PE at the age of 65 years. Two days prior to admission he had presented to the ED for care of right calf swelling, which had been present 6 days. Subcutaneous low molecular weight heparin therapy had been commenced and an outpatient ultra sound venous Doppler examination had been arranged to assess for deep vein thrombosis. On admission his blood pressure was 130/95 mmHg, heart rhythm was regular with heart rate of 105 bpm, his temperature was 36.0 C, respiratory rate was 22 breaths/minute (while breathing room air) and his capillary oxygen saturation was 98%. Examination was unremarkable, except for 4 cm difference in calf girths 41 cm on the right and 38 cm on the left. Sinus tachycardia was evident on electrocardiogram with no other signs of suggestive of PE. His plasma D-dimer level was elevated at 15.702ng/ml (reference range is <500ng/ml). Partial pressure of oxygen 13.5kPa while breathing room air. CXR showed slight prominence of the proximal hilar vessels and reduction of the right lung vascularity (Westermark's sign). A large embolus in the right main pulmonary artery, involving both upper and lower lobe segmental branches was evident on CTPA. An ultrasound Doppler of the right leg revealed a large thrombus in the right superficial femoral vein. Within few hours the patient experienced symptomatic hypotension and tachycardia leading to transfer to the intensive care unit (ICU) and bedside transthoracic echocardiography. Consistent with PE, this examination revealed acute right ventricular dilatation, and moderate tricuspid regurgitation. Intravenous thrombolytic therapy was instituted promptly and over the next few days the patient’s haemodynamic instability resolved and he was discharged on warfarin therapy six days after admission.

Westermark's sign is usually subtle and probably most often noted in retrospect after the diagnosis has been made by CTPA. It has a low sensitivity (14%) and high specificity (92%) for the diagnosis of pulmonary embolism. Its high specificity for PE makes it a sign well worth being aware of and in this case described its early recognition may lead to early treatment and to prevention of cardiovascular insult.

Z Tsvetanova, H Logan
Department of Radiology, Midland Regional Hospital, Mullingar, Co Westmeath
Email: tsvetanova.zornitsa@gmail.com

References


Comments: