

Hump in The Road: An Unusual Opacity on Admission Chest X-Ray

A 57-year-old male, presented to the Emergency Department with a four day history of pleuritic left sided chest pain without significant associated dyspnea, productive cough or haemoptysis. He reported recent subjective temperatures. He had a past history of renal calculi and was an ex-smoker with a 30 pack year history. Clinical examination was significant for sinus tachycardia (110 BPM) with otherwise normal vital signs, elevated BMI and moderate crepitations at the left base. Admission ECG showed sinus tachycardia of 114bpm; chest x-ray showed well defined pleural based opacification in the left lower zone with an associated small pleural effusion. Admission blood work was remarkable for a markedly elevated CRP (212mg/L), mildly raised creatinine (114mg/L), moderately elevated d-dimers (1.86mg/L) and mild hypoxia (pO_2 10.6).

The patient was treated with intra-venous amoxicillin/clavulanic acid, analgesia and prophylactic dose low molecular weight heparin. Admission chest x-ray was thought to be concerning for a pleural based malignancy and CT thorax was arranged to further characterise chest x-ray findings. CT thorax subsequently revealed the presence of a large occluding PE in the left pulmonary artery with distal pulmonary infarction within the lingula). The patient was immediately commenced on therapeutic dose Tinzaparin. There was no evidence of right heart strain on either CT Thorax or echocardiography. The patient was treated with the novel oral anticoagulant Rivaroxaban for six months.

Assessing the patient's chest x-ray in light of the subsequent CT it appears the soft tissue density visualised represented pulmonary infarction with super-imposed infection. This is known as "Hampton's Hump" - and was first described in 1940¹. In our case this led to x-ray appearances suspicious for malignancy with associated infection and admission investigations suggestive of pneumonia rather than pulmonary embolism. Hampton's hump is a known phenomenon but our case is relatively unusual in that the CXR and blood work were highly suggestive of pneumonia, rather than PE as a cause of symptoms. Atypical features, considering the burden of thrombus, were the presence of only very mild hypoxia (pO_2 10.6 on ABG, normal O_2 saturations), the relatively modest elevation of d-dimers and absence of right heart strain on echocardiogram.

In patients with suspected PE the chest x-ray is commonly normal and used to exclude alternative diagnoses including pneumonia. However, there are a number of radiological findings, associated with PE including Hampton's Hump; Westermark's Sign, which occurs when reduced vascular markings are seen on chest x-ray in an oligaemic area distal to the embolus^{2,3}; Fleischner's Sign, which is a prominent pulmonary artery resulting from thrombus impaction and pulmonary hypertension⁴ and a 'Knuckle Sign'

where the pulmonary artery is abruptly cut off (known as Palla's Sign if affecting the right descending pulmonary artery^{2,3}). Patients with a PE may also develop a pleural effusion or atelectasis with elevation of the hemi-diaphragm. In summary, while a chest x-ray is most commonly used in patients with PE to rule out alternative diagnoses, awareness of positive findings on chest x-ray is important.

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