

Eighty-five-year-old man with mosaic attenuation on chest imaging

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DESCRIPTION

An 85-year-old man presented with worsening dyspnea and non-productive cough ongoing for 3 days prior to the admission. The patient denied any fever, chills, chest pain, palpitations, orthopnoea or paroxysmal nocturnal dyspnoea. Physical examination was remarkable for mild respiratory distress without any additional findings on auscultation. Social history was significant for >20 pack-year history of smoking. Vitals on admission: blood pressure 138/85, heart rate 92 bpm, respiratory rate 22, pO₂ 94% on room air. EKG was noticeable for normal sinus rhythm with ventricular rate of 87, without any ST-T wave changes.

A chest X-ray (CXR) was significant for hyperlucent lungs (figure 1). CT of chest without intravenous contrast was performed to evaluate for possible atypical infection that could have been missed on the CXR.¹ Areas of hypoattenuation are visible on the scan (figure 2A).

Low attenuation areas on CT chest are abnormal; the differential diagnosis includes small airway lung disease (such as bronchiectasis, cystic fibrosis, constrictive bronchiolitis) and vaso-occlusive disorder like pulmonary embolism (PE). Pulmonary regions that are affected by small airway lung disease tend to retain air during exhalation and appear more lucent. The level of airway obstruction is usually at or near the lobular level that gives a mosaic pattern of normal and hyperlucent lung.² In small airway lung disease, enhancement of non-homogeneously attenuated lung parenchyma at the end of expiration has led to the



Figure 1 Chest X-ray showing hyperlucent lungs.

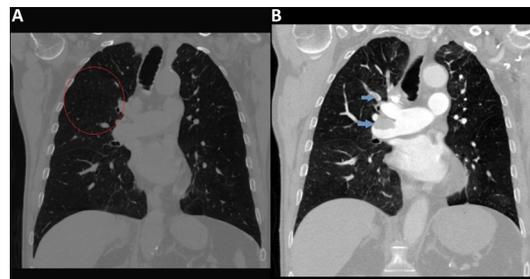


Figure 2 (A) CT chest without intravenous contrast shows area of low attenuation (marked by red) in the right lung, compare it with the right lower lobe and left lung with normal attenuation. (B) CT chest with intravenous contrast shows pulmonary embolism (PE; blue arrow) in the right pulmonary artery with area of low attenuation distal to the PE.

recommendation that expiratory sections should be obtained routinely to assist with the diagnosis.³

Similarly, in case of PE, the oligoemic lung signifies decrease in size and number of pulmonary vessels as compared with normal lung. This pattern on non-contrast CT chest is often referred to as mosaic oligoemia or mosaic perfusion pattern. In the presence of a PE, this pattern is visible throughout the breathing cycle. Mosaic oligoemia should prompt clinicians to perform a CT chest with intravenous contrast to rule out PE in appropriate clinical setting.

The patient underwent CT chest with intravenous contrast that showed an embolism in the right pulmonary artery (figure 2B).

He was started on intravenous heparin drip for further management. The patient was discharged on oral anticoagulation after 5 days of hospitalisation.

Learning points

- ▶ Mosaic attenuation of lungs on CT scan of the chest is seen when areas of normal attenuation and hyperlucency are present.
- ▶ Persistent mosaic attenuation seen on CT chest (without contrast) during inhalation and exhalation or throughout the breathing cycle should make clinicians suspect pulmonary embolism.
- ▶ Mosaic attenuation on non-contrast CT chest should be followed by additional testing to rule out pulmonary embolism when clinically suspected.



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