A case of massive haemoptysis

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DESCRIPTION

A 77-year-old female never-smoker presented with massive haemoptysis. Admission plain chest radiograph was normal.

She was haemodynamically stable on presentation but the following morning she had a further large-volume haemoptysis (>500 mL), resulting in respiratory arrest. Following resuscitation, haemoglobin fell from 94 to 66 g/dL. CT angiogram was performed (figure 1).

She had previously been investigated for small volume haemoptysis and left upper lobe mass-like consolidation, which had fully resolved following a course of antibiotics. Recent bronchoscopy was normal, with no pathological organisms. There was no evidence of malignancy or connective tissue disease, and there was no additional past medical history. CT imaging had been reviewed at a thoracic oncology multi-disciplinary meeting and the previous episode was attributed to non-specific infection.

Question

What is the diagnosis (see figure 1)?

- (A) Pulmonary artery pseudoaneurysm.
- (B) Bronchial artery haemorrhage.
- (C) Bleeding endobronchial tumour.
- (D) Ruptured aortic aneurysm.

Figure 1 Sagittal CT angiogram, performed once the patient was stabilised.

Figure 2 Sagittal view of CT angiogram demonstrating pseudoaneurysm (arrow) of the left upper lobe pulmonary artery (anterior segment).

Answer: A

CT demonstrates pseudoaneurysm of the left upper lobe pulmonary artery (figure 2, arrow).

Bronchial arteries arise from the descending thoracic aorta, not the pulmonary circulation. Normal bronchoscopy and recent radiological resolution make an endobronchial tumour highly unlikely; neither the history nor imaging suggests aortic aneurysm rupture.

Massive haemoptysis is not commonly encountered, but its management is highly challenging. Mortality is >50%¹; however, prompt emergency treatment can be life-saving through prevention of further haemorrhage and airway compromise.

Figure 3 Pseudoaneurysm at angiography: pre-coiling (A) and post-coiling (B), demonstrating occlusion of left upper lobe pulmonary artery.

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Traditional 'A to E' assessment is critical: emergency measures include maintaining a patent airway, providing supplemental oxygen and correcting any coagulopathy. If the bleeding site is known, laying the patient in the lateral decubitus position on the side of the haemorrhage may help. Tranexamic acid may reduce bleeding duration and volume,² but identifying the bleeding source may be critical in permitting life-saving treatment.³ Once the patient is stabilised, CT angiography can be used to identify the site of bleeding. In our patient, CT angiography was not performed immediately due to clinical stability; had this been performed on her arrival, then the episode resulting in respiratory arrest may potentially have been avoided.

Bleeding originates from bronchial arteries in >90%, but differentiation from pulmonary artery pseudoaneurysm (PAP) is important.

Learning points

- ▶ Massive haemoptysis is a life-threatening emergency with mortality >50%. However, simple 'A to E' measures can support the patient until definitive treatment is available.
- ▶ Bleeding can occur from either bronchial or pulmonary circulation, but most commonly from the bronchial vessels.
- ▶ Early identification of the source of bleeding through CT angiography offers access to life-saving interventions such as endovascular coil embolisation.

PAP is rare (5%–10% of cases); associations include tuberculosis (Rasmussen aneurysm), abscess, malignancy and vasculitis.^{1,3} No underlying cause of PAP was identified in this patient.

Endovascular coil embolisation is recognised in treating both bronchial artery haemorrhage and PAP.³ This was performed successfully in this patient (figure 3). She was discharged from hospital 1 week later with no further haemoptysis or other complications at 12-month follow-up.

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REFERENCES

1. Khalil A, Parrot A, Nedelcu C, *et al*. Severe hemoptysis of pulmonary arterial origin: signs and role of multidetector row CT angiography. *Chest* 2008;133:212–9.
2. Moen CA, Burrell A, Dunning J. Does tranexamic acid stop haemoptysis? *Interact Cardiovasc Thorac Surg* 2013;17:991–4.
3. Pelage JP, El Hajjam M, Lagrange C, *et al*. Pulmonary artery interventions: an overview. *Radiographics* 2005;25:1653–67.

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