Non-bronchial collateral arising from the right vertebral artery: a rare cause of recurrent massive haemoptysis

Arvind Kandoria, Kunal Mahajan, Rajesh Sharma, Vivek Rana

DESCRIPTION
A 48-year-old man with recurrent episodes of massive haemoptysis was referred to us for bronchial artery embolisation (BAE). He had been treated for pulmonary tuberculosis 6 years earlier. Chest X-ray showed a fibrocavitary lesion in the right upper lobe. A descending thoracic aortogram was carried out, which revealed neither hypertrophied bronchial arteries nor systemic collaterals. Bilateral pulmonary angiogram was normal. Selective injections of bronchial, intercostals and subclavian arteries were also normal. On selective hooking up of the right vertebral artery, an abnormal non-bronchial collateral (2.8 mm in diameter) was seen, which was causing hypervascularity and parenchymal blush in the left upper lobe (figure 1 and video 1). In the later phase, it demonstrated

Figure 1  Selective angiogram of the right vertebral artery showing a tortuous collateral arising from its proximal part causing hypervascularity and parenchymal blush in the upper lobe of the right lung.

Video 1  Selective angiogram of the right vertebral artery showing a tortuous collateral arising from its proximal part causing hypervascularity and parenchymal blush in the upper lobe of the right lung. Note in the later phase of angiogram, abnormal shunting to pulmonary artery is seen.

Figure 2  Selective angiogram of the right vertebral artery showing abnormal shunting from the collateral to pulmonary artery (arrow) in the later phase of angiogram.
abnormal shunting to the pulmonary artery (figure 2). We embolised this collateral vessel with a 3 mm×5 cm pushable fibred metallic coil (Cook Inc, Bloomington, Indiana, USA) via a 5 Fr Cobra catheter (figure 3). Postembolisation, the parenchymal blush disappeared (video 2). There were no procedure-related complications. The patient experienced no further episodes of haemoptysis during a follow-up period of 3 months. BAE is now considered to be the most effective non-surgical treatment of recurrent massive haemoptysis. Sources of bleeding include the bronchial arteries (>90%), pulmonary artery (5%) and non-bronchial system collaterals (<5%). Systemic sources include intercostal, thoracic, phrenic, thyrrocervical, axillary, subclavian, internal mammary and vertebral arteries, as in the present case. Non-bronchial collaterals can be differentiated from the ectopic bronchial arteries, as the former never join the bronchial tree. They should be investigated and treated concurrently with the hypertrophied bronchial arteries during BAE. Failure to identify and treat them is the cause of early BAE failure.

Learning points

▸ Bronchial artery embolisation (BAE) is an efficacious non-surgical method for treatment of recurrent massive haemoptysis.
▸ Bronchial arteries are the most common source of bleeding in recurrent massive haemoptysis.
▸ Non-bronchial collaterals from systemic arteries are responsible in <5% cases.
▸ Non-bronchial collaterals from vertebral arteries are extremely rare sources of recurrent massive haemoptysis.
▸ Failure to identify these non-bronchial collaterals may result in early BAE failure.

Competing interests None declared.
Patient consent Obtained.
Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES