Transcatheter embolization of pulmonary artery pseudoaneurysm secondary to squamous-cell lung cancer

To the Editor,

Pseudoaneurysm is a rare abnormality of the pulmonary arteries. Pulmonary artery pseudoaneurysm (PAP) may develop due to primary lung cancer or metastatic lung disease, a rare phenomenon; the proposed mechanism for its formation involves direct tumour invasion and erosion of the vessel wall. Due to hemoptysis and the risk of rupture and pseudoaneurysm formation involves direct tumour invasion and erosion of the vessel wall. Hemoptysis originates from the pulmonary arteries in less than 10% of patients, and pseudoaneurysm is the main cause of bleeding. Their wall consists of either a single layer of the arterial wall or the surrounding tissue and thus poses a higher risk of rupture. PAP may be associated with various etiologies such as infection, with tuberculosis being the most common, bronchiectasis, trauma, iatrogenesis, vasculitis, and malignancy. According to some reported cases, PAP due to primary lung cancer is rare and is commonly combined with tumour necrosis. The squamous-cell carcinoma is the most frequent carcinoma involved in PAP, due to its biological features that make it prone to necrosis. In this case, the PAP was secondary to tumour progression involving a peripheral branch of the right pulmonary artery.

PAPs can be treated by interventional radiologists using minimally invasive endovascular techniques as an alternative to surgical management. Due to its rarity, mainly isolated case reports about endovascular treatment have been published. To the best of our knowledge, few cases have been reported in the literature on endovascular management of pulmonary artery lesions.

Given the persistence of moderate hemoptysis and anaemia, after a multidisciplinary meeting comprising Pulmonology and Interventional Radiology, transcatheter arterial embolization of the vascular lesion was decided upon. Under conscious sedation, the right pulmonary artery was catheterized via the right femoral vein using the ultrasound control. The angiography detected the presence of a fusiform pseudoaneurysm of the middle lobe branch of the pulmonary artery, with a maximum diameter of 5-mm and an extension of 2-cm between the origin and the arterial bifurcation. After superselective catheterization, the lesion was embolized with several detachable coils of 0.018-inch size and 3-6mm diameter with the proximal coil placed 2-mm from the origin. The final angiographic study demonstrated complete occlusion of the PAP. There were no complications. The patient was discharged with occasional blood-streaked sputum, and no anaemia. A follow-up chest CT after 1 month showed coils in the middle lobe branch of the pulmonary artery with occlusion of distal branches. The patient remained with only some episodes of blood-streaked sputum, predominantly in the morning, and a blood test without haemoglobin decrease.

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caused by lung tumours. Various techniques for effective embolization have been described using several embolic agents, such as, coils, vascular plugs, stents, and liquid agents. In this case, coil embolization was chosen due to the operator’s previous experience with bronchial embolization. Detachable coils have the advantage of allowing better control of their liberation, and so complications, such as coil migration and vessel wall damage are diminished.

The presented case supports the current evidence showing that pulmonary artery endovascular management is an effective, safe, and minimally invasive therapeutic approach for the treatment of hemoptysis in patients with lung tumors, although few centres perform it.

**Fig. 1** Contrast-enhanced axial (A) and coronal sectional (B) chest CT with mediastinal setting revealing a cavitary mass completely involving the middle lobe branch of the pulmonary artery causing stenosis in its proximal segment and distal ectasia.

**Fig. 2** Angiography studies. (A) Pre-procedure selective right pulmonary angiography (B) shows the fusiform pseudoaneurysm of the middle lobe branch of the pulmonary artery. (C) Angiography post-procedure shows the complete embolization of the pseudoaneurysm with multiple detachable coils.

interventional radiologist who performed the procedure and ARG followed the procedure. ARG, EMT, ES, TS, IM, and TP read and approved the final manuscript.

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**Ethical Considerations**

Written informed consent was obtained for use of clinical data and publication.

**Declaration of Competing Interest**

All authors have no conflicts of interest to declare.
References


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