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Successful endovascular embolization of an intralobar pulmonary sequestration

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ABSTRACT

Pulmonary sequestration is a congenital malformation characterized by dysplastic pulmonary tissue which receives blood supply by arterial systemic system, not in communication with tracheobronchial tree. Although it could be asymptomatic, it can also cause recurrent infections and hemoptysis, rarely massive and fatal.

The conventional treatment consists in surgical resection of the pulmonary sequestration, but in the last few years endovascular embolization has been proposed as a valid therapeutic alternative. In this paper, we report the case of a 43–year-old woman affected by recurrent hemoptysis. Computed tomography angiography of the chest, abdomen, and pelvis was performed in emergency setting. Intralobar pulmonary sequestration in the lower lobe of the right lung was found. A bulky aberrant artery originating from the thoracic aorta supplied the pulmonary sequestration. The interventional radiologist performed an endovascular embolization with coils of the vascular malformation.

The technical success of the procedure was confirmed by computed tomography angiography of the chest performed on the fourth day after procedure. Further examination performed 6 months later showed no complications.

The patient was completely asymptomatic during follow-up. This procedure can demonstrate that arterial embolization is a valid and effective therapeutic alternative to surgical resection in the treatment of pulmonary sequestration.

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Introduction

Pulmonary sequestration is a congenital malformation consisting in dysfunctional pulmonary tissue, supplied by aberrant systemic arteries, not in connection with bronchial tree. Its incidence is estimated to be between 0.15% and 1.8% of the general population [1–5]. From a pathologic point of view, there are 2 types of pulmonary sequestration: intralobar and extralobar type.

Intralobar pulmonary sequestration is a dysfunctional pulmonary tissue covered by visceral pleura with venous drainage into pulmonary veins. Usually it is located in the lower lobes, especially on the left side [5]. Malformative tissue is often heterogeneous (with fibrosis, cysts, or bronchiectasis) as a consequence of acute or chronic inflammatory processes [6].

Extralobar pulmonary sequestration is a pulmonary tissue with independent pleura and systemic venous drainage [1,2,4,5].

Clinically, extralobar pulmonary sequestration may become symptomatic in the first weeks of life, because of the presence of left-to-right shunt, whereas intralobar type is more frequently diagnosed in young adults affected by recurrent pneumonia [1,2]. A dangerous complication of intralobar type is hemoptysis, although it rarely becomes massive [1,6].

Surgical resection is currently the gold standard treatment of pulmonary sequestration [7,8]. Recent studies have shown that endovascular embolization is a valid and effective therapeutic option for symptomatic pulmonary sequestration. It is a minimally invasive approach associated with lower morbidity compared with surgical resection [5,8].

Cases of extralobar pulmonary sequestration treated with endovascular embolization have been reported in the literature with positive results [1,7,8]. On the other hand, only few cases of intralobar type treated with endovascular treatment have been reported [1].

In this paper, we report the case of a 43–year-old woman affected by recurrent episodes of hemoptysis, due to a massive intralobar pulmonary sequestration. An endovascular embolization of the malfomation with multiple coils was performed. Patient was successfully treated.

Technique

A 43-year-old woman (no smoking in anamnesis) presented to our emergency room because of repeated episodes of hemoptysis in the last 3 days. No chest pain, dyspnea, fever, weight loss, or recent trauma was reported. Moreover, the patient had no history of anticoagulant therapy or coagulative pathologies. Vital parameters were normal. Computed tomography angiography of chest, abdomen, and pelvis was perfomed. The CT revealed the presence of an arteriovenous malformation in the right lower pulmonary lobe.

The arterial in-flow resulted from an abnormal vessel originating from the descending thoracic aorta (Fig. 1A, B, and C). Venous out-flow was supplied from ipsilateral lower pulmonary vein. The pulmonary parenchyma surrounding vascular malformations was not in communication with bronchial tree and there were small areas of “ground-glass” consolidation (Fig. 1D).

The diagnosis of intralobar pulmonary sequestration was suspected. An angiographic study was performed so as to confirm the diagnosis and to eventually treat the malformation.

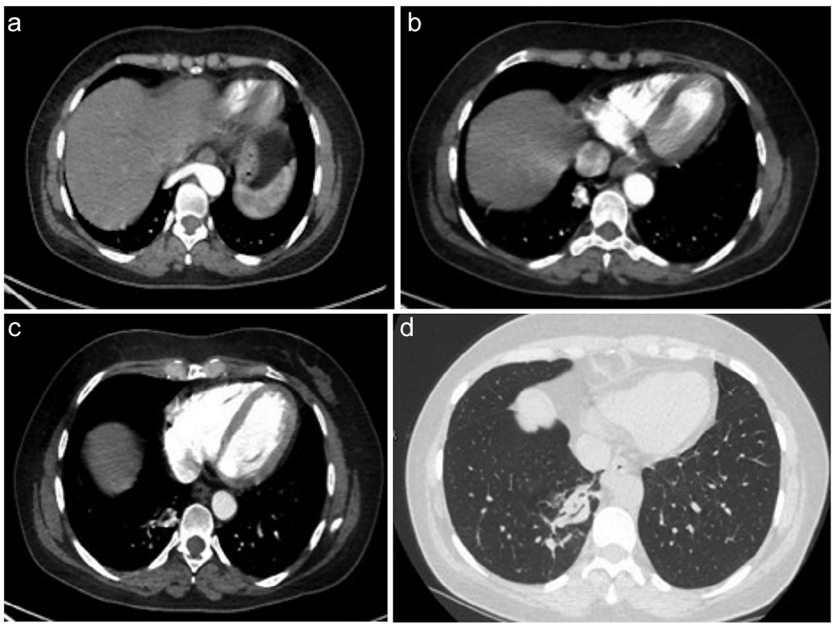

Fig. 1 – (A, B, C, and D) Pre-embolization chest CT examination (arterial phase) on axial planes showing the presence of a large systemic anomalous arterial branch (A) emerging from the right anterolateral wall of the descending thoracic aorta and subdivided in further abnormal arterial branches (B, C) resulting in arteriovenous malformation in the basal medial lobe of the lower lobe of the right lung. The arteriovenous malformation is surrounded by thickened lung parenchyma and areas of “ground glass” (D). CT, computed tomography.