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Case Report

Utility of endovascular embolisation in management of peripheral pulmonary artery aneurysms

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ABSTRACT

There are no large scale studies exclusive for pulmonary artery aneurysms as a cause of massive hemoptysis, only small studies are there. No randomised control trial is there to suggest efficacy of surgical excision or endovascular treatment over each other. It's well known that definite treatment by surgical excision carries high mortality when done in emergency sitting. Endovascular approach in such a patient is a less utilised treatment modality and that too with coil embolisation is not much practiced.

This article emphasises the role of CTA in diagnosing and embolisation as emergency management of these aneurysms.

1. Introduction

Pulmonary artery aneurysms are uncommon causes of hemoptysis; however, they should be kept in the differential diagnosis and must be recognised at the earliest to prevent life threatening haemorrhage. Patients of ruptured pulmonary artery aneurysms present with intermittent hemoptysis, with the amount of expectorated blood varying from mild to massive. Endovascular embolisation is an effective and relatively non-invasive technique compared to surgical procedures which involve lobectomy or pneumonectomy of the involved lung leading to prolonged patient recovery, hospital stay and decreasing pulmonary reserve.

We discuss a case series of three patients who came with complaints of massive hemoptysis. Computed Tomography Angiography (CTA) of thorax revealed a peripheral pulmonary artery aneurysm as the cause of hemoptysis. These patients were managed by endovascular coil embolisation.

2. CASE 1

A 60 year old female, non-smoker, non-alcoholic, non-diabetic, hypertensive patient presented with massive hemoptysis. She had history of pulmonary tuberculosis 10 years back for which she took incomplete treatment. The patient complained of cough with expectoration and breathlessness for last two months, and occasional bouts of hemoptysis, about 100–150 ml sputum mixed fresh blood. She came to emergency with increasing frequency and amount of blood in sputum. Her chest X-ray revealed fibrobronchiectatic changes with an ill defined inhomogeneous opacity in left upper zone. CTA thorax was done in both pulmonary arterial and aortic phases of contrast enhancement to look for pulmonary and bronchial arteries. CTA revealed a lobulated, 10 × 10 mm aneurysmal lesion in apicoposterior segment of left upper lobe (Fig. 1a axial

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section and Fig. 1b coronal section), surrounded by a thick walled cavity and fibrobronchiectatic changes. There were areas of ground glass opacities in the same lobe and also in bilateral basal lung segments on account of aspiration of blood. Bronchial arteries were not enlarged and no other aberrant systemic vessels supplying the lesion were observed. After reviewing all the images a diagnosis of Rasmussen aneurysm was made likely due to pulmonary tuberculosis.

Patient was taken up for emergency Digital Substraction Angiography (DSA) under General Anaesthesia (GA). On DSA there was a pseudo aneurysm filling from apicoposterior branches of left ascending pulmonary artery (Fig. 1c). On super selective cannulation, single feeder leading to aneurysm was not seen and instead multiple small vessels leading to a pseudoaneurysmal cavity were seen (Fig. 1c). These feeding vessels were selectively cannulated and embolised (Fig. 1d) using 0.018 coils (Micronester coils, Cook, USA). There was no fresh bout of hemoptysis and patient was discharged after a week. However mild hemoptysis recurred after two months. CTA thorax this time did not reveal any dilated feeding vessel or filling of the pseudoaneurysm. A well defined cavity was visualised surrounded by fibrotic parenchyma. The patient was referred for lobectomy.

3. CASE 2

A 35 year old male, non-smoker and non-alcoholic presented with two episodes of massive hemoptysis within a gap of 15 days. Patient gave prior history of off and on fever and Deep Vein Thrombosis (DVT) involving right common and superficial femoral vein. Autoimmune causes of hypercoaguable states such as IgG and IgM anticardiolipin antibodies and anti nuclear antibodies were negative and tested for protein C and S deficiency, hyperhomocysteinemia, AntiThrombin-III deficiency and factor V leiden mutation were also negative. Patient had cough and breathlessness for last 2 weeks and in between he had two episodes of massive hemoptysis. Chest X-ray PA view revealed a nodular opacity in left infrahilar region (Fig. 2e). CTA chest revealed a large aneurysm measuring approximately 2×2 cms, arising from anterior basal segmental branch of left descending pulmonary artery (Fig. 2a volume rendered image and Fig. 2b axial section). Emergency coils'

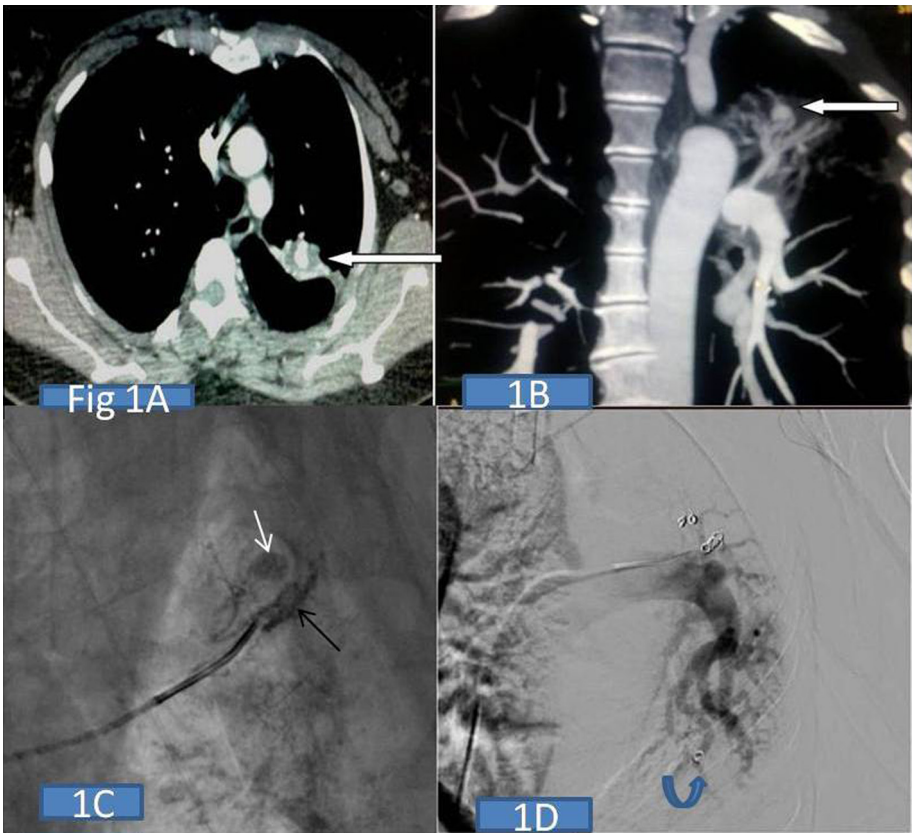

Fig. 1. A. Contrast enhanced CT axial image showing a small Rasmussen aneurysm in the apicoposterior segment of left lung with surrounding cavity with hypervascular wall (arrow). B. coronal MIP image showing the aneurysm in relation to left upper lobe segmental branches. C. DSA shows catheter in left upper lobe segmental branch with filling up of aneurysm (white arrow) and contrast blush (black arrow) in the surrounding lung. D. DSA post coil embolisation in the subsegmental branches of left upper lobe showing no filling of aneurysm and the absence of hypervascularity and blush in the surrounding lung. One of the coils (curved arrow) has accidently migrated into one of the segmental branch of left descending pulmonary artery.