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Case Report

Pulmonary Artery Pseudsoaneurysm due to Mycobacterium Tuberculosis Managed Successfully by Transcatheter Coil Embolization

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Abstract

Pulmonary artery pseudoaneurysm due to mycobacterium tuberculosis is a rare clinical entity. A 29 years old female presented to us with hemoptysis. She was a known case of pulmonary tuberculosis and was on antitubercular treatment. Emergency transcatheter coil embolization of the neck of the sac of pseudoaneurysm arising from the right descending pulmonary artery was done. At 6 months of follow up, the patient was asymptomatic. We are reporting this case due to a rare presentation of pulmonary artery pseudoaneurysm due to mycobacterium tuberculosis and pulmonary artery as an unusual source of hemoptysis instead of the bronchial artery.

Learning objectives

Pulmonary artery pseudoaneurysm due to Mycobacterium tuberculosis although rare but it's a potential life threatening situation, however early detection and prompt management may prevent fatal complications. Thus, the treating physician should keep this as a differential diagnosis whenever a patients presents with a massive hemoptysis.

Keywords: mycobacterium tuberculosis; pulmonary artery pseudoaneurysm; transcatheter coil embolization; hemoptysis

Introduction

Pulmonary artery pseudoaneurysms are uncommon but potentially life-threatening clinical entity since they are at high risk of rupture. Common causes includes infections (mycotic aneurysms), primary or secondary neoplasm, trauma, iatrogenic causes, pulmonary hypertension, and vasculitis [1, 2]. Patients usually present with hemoptysis, cough and shortness of breath [2]. The patient may presents with massive hemoptysis due to rupture of pseudoaneurysm and has a very high mortality rate [3]. Timely diagnosis and prompt intervention either transcatheter or surgical reduces the morbidity and mortality significantly. The present report highlights a case of right descending pulmonary artery pseudoaneurysm due to mycobacterium tuberculosis in a young female, which was managed successfully by transcatheter coil embolization.

Case presentation

A 29-year-old female presented to us with recurrent episodes hemoptysis and shortness of breath for the last 4 weeks. Initially, hemoptysis was small in amount around 5-10 ml per day which increased to around 50-100 ml per day for the last 2-3 days. She was a known case of pulmonary tuberculosis and was on anti-tubercular therapy (ATT) for the last 6 months. On examination, the patient had a sinus tachycardia, blood pressure was 90/60 mm of mercury, mild tachypnea was present (respiratory rate 22/minute), and clinically pallor was present. Haematological and biochemical tests were within normal limits except for iron deficiency anaemia (haemoglobin was 7.2 gram/dl). A chest X-ray was done which showed a perihilar opacity which was extending towards right lower lobe [**Figure 1a and 1b**].

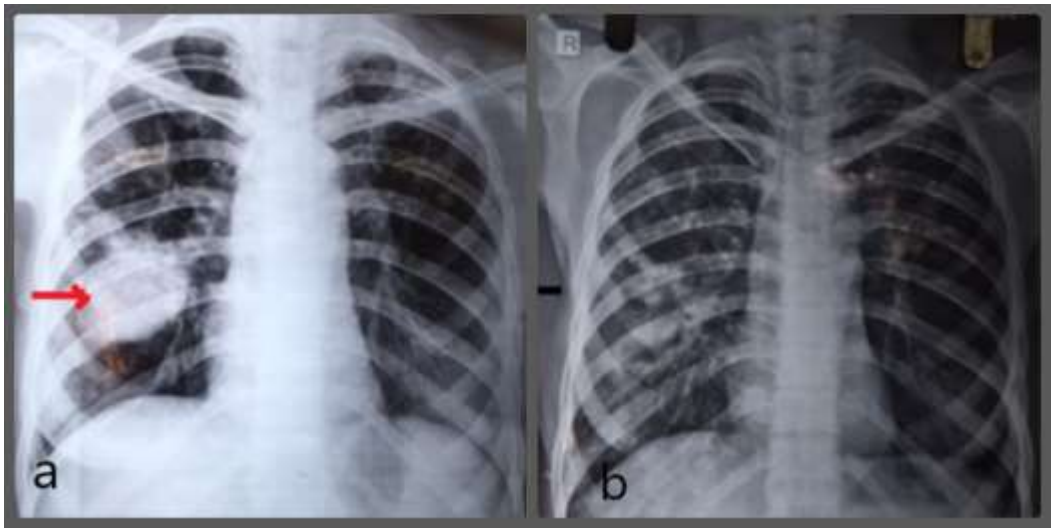

Figure 1: *(a) X-ray chest showing a perihilar opacity extending towards right lower lobe (red arrow), (b) X-ray chest at 6 months follow up showing complete resolution of opacity (pseudoaneurysm)*

A computed tomography (CT) scan of the thorax was done, which showed a large (approximately 50x55 mm size) pseudoaneurysm arising from the right descending pulmonary artery. The patient was initially resuscitated with transfusion of 1 unit of packed red blood cells (PRBC). The emergency transcatheter procedure was planned.

To find out the source of bleeding first, descending thoracic aortogram was done which showed that bronchial artery was not a feeding vessel of the pseudoaneurysm. After that pulmonary angiogram was performed via trans-femoral venous access. The pulmonary angiogram showed a large pseudoaneurysm originating from the right descending pulmonary artery, about 2-3 cm distal to the origin of the right middle lobe artery [**Figure 2**]. Embolization of the neck of the pseudoaneurysm sac was done with two 8x12 mm complex helical coil, one 3x5 mm cook coil, and two 4x5 mm cook coil. After the procedure, the pulmonary angiogram showed that there was no contrast leak into the sac of pseudoaneurysm and distal right lower lobar branches showing normal contrast opacification [**Figure 3**]. The postoperative recovery was uneventful and at 6 months of follow up the patient was asymptomatic and a chest x-ray was improved showing no residual pseudoaneurysm.

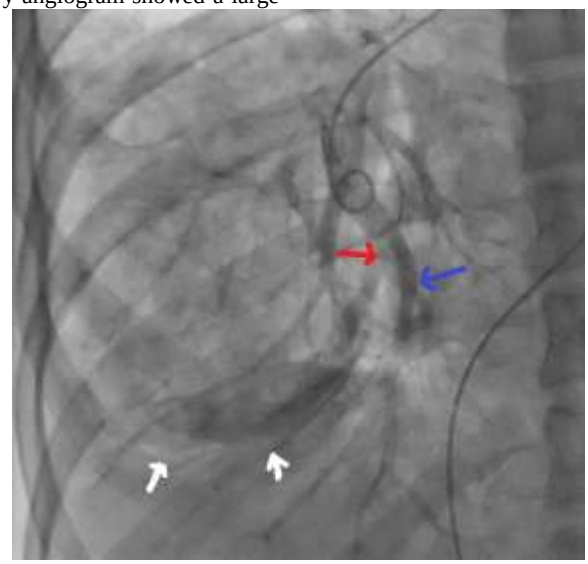

Figure 2: *Pre coiling pulmonary angiogram showing a large pseudoaneurysm (white arrows) originating from the right descending pulmonary artery (red arrow), and normal right lower lobar branches (blue arrow)*

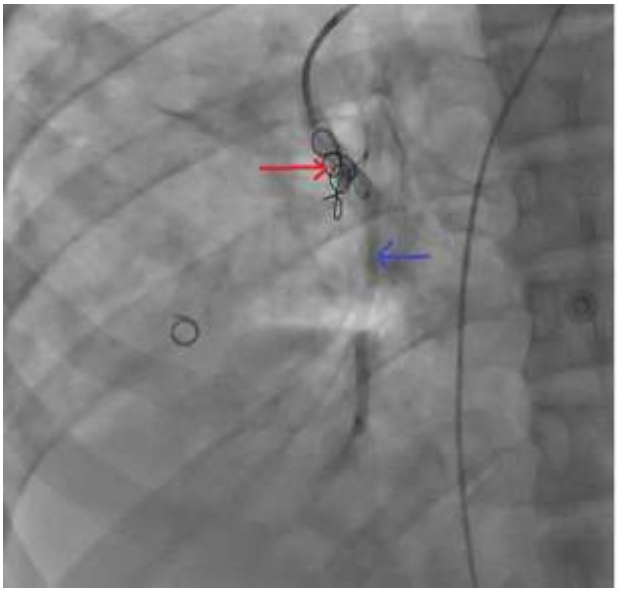

Figure 3: *Post coiling pulmonary angiogram showing coils at the neck of the sac of the pseudoaneurysm with no contrast leak in the sac (red arrow), and normal contrast opacification in the distal right lower lobar branch (blue arrow)*

Discussion

In the present era, the pulmonary artery pseudoaneurysms (PASA) are rarely reported due to the introduction of effective and potent ATT [1]. Mycobacterium tuberculosis affects the lung parenchyma in variety of pathological mechanisms including formation of tuberculoma, cavity formation, and erosion of tubercular cavity into adjacent pulmonary vessels resulting in pseudoaneurysm formation (Rasmussen's aneurysm) [4]. In most of the patients, the source of bleeding is bronchial arteries or non-bronchial systemic arteries. The pulmonary artery is a source of bleeding in less than 10% of the patients [5]. Our patient presented with hemoptysis and shortness of breath and had a history of pulmonary tuberculosis for the last 6 months and was on ATT. Probably, the tubercular lesion had eroded the pulmonary artery resulting in the formation of the pseudoaneurysm.

Transcatheter coil embolization of the bronchial artery or pulmonary artery pseudoaneurysm is the preferred approach, as this can be done easily in emergencies with massive hemoptysis [2, 6]. Sbano et al. reported that sometimes hemoptysis is not completely resolved in isolated bronchial artery embolization and requires coil embolization of the pulmonary artery pseudoaneurysm itself [6]. The open surgical technique involves thoracotomy with the removal of the involved lobe of the lung (lobectomy or sometimes pneumonectomy) for control of bleeding. As the open surgical technique has high morbidity and mortality in emergencies, it is reserved for stable patients or patients with failed transcatheter procedures [7].

In our patient, pulmonary artery was a source of bleeding which is quite uncommon. Transcatheter coil embolization of the pseudoaneurysm sac was done successfully and at 6 months of follow up, the patient remained asymptomatic.

Conclusion

Pulmonary artery pseudoaneurysm due to Mycobacterium tuberculosis is a rare clinical entity, which may present as massive hemoptysis that can be life threatening. However, early detection and prompt management via transcatheter technique may prevent mortality and further complications.

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