



Rasmussen's Aneurysm: Case Report And Literature Review

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Abstract: Rasmussen aneurysm describes an aneurysm occurring in the branch of a peripheral pulmonary artery adjacent to or within a tuberculous cavity. In the clinical context, Rasmussen aneurysms can be a cause for massive hemoptysis among patients with tuberculosis, which has an associated mortality ranging from 5 to 25%. Careful evaluation of pre- and post- contrast computed tomography (CT) scans of the lung will demonstrate focal enhancement within the pulmonary aneurysm, which may be one of the first clues in diagnosis. We report a case of Rasmussen aneurysm in a male patient with a history of tuberculosis

Key words: -Rasmussen aneurysm, Hemoptysis, Tuberculosis.

I. INTRODUCTION

Rasmussen aneurysm describes an aneurysm occurring in the branch of a peripheral pulmonary artery adjacent to or within a tuberculous cavity (1). The pathologic process thought to cause this condition involves the infiltration of granulation tissue into the adventitia and media, which is later replaced by fibrin, leading to thinning of the vessel wall with subsequent aneurysm formation (2).

In the clinical context, Rasmussen aneurysms can be a cause for massive hemoptysis among patients with tuberculosis, which has an associated mortality ranging from 5 to 25% (3). Careful evaluation of pre- and post- contrast computed tomography (CT) scans of the lung will demonstrate focal enhancement within the pulmonary aneurysm, which may be one of the first clues in diagnosis (4).

In the present article, we report a case of Rasmussen aneurysm in a male patient with a history of tuberculosis, and we discuss the main implications related to the radiographic evaluation.

II. CLINICAL OBSERVATION

A 24-year-old male patient with a past history of tuberculosis of lung, which was treated with anti-tubercular therapy one year ago, had presented with a history of recurrent hemoptysis and was referred to us for evaluation and management. He underwent CT pulmonary angiogram for evaluation of the cause of hemoptysis, which revealed multiple pulmonary nodules and thick-walled pulmonary cavities along in the right and left upper lobe "Fig 1", with associated focal dilatation involving the sub-segmental division of the right upper lobe pulmonary artery "Fig 2". The lesion was located within the posteromedial aspect of the thick-walled cavity, referring a Rasmussen aneurysm. Also the CT showed an active contrast extravasation in another pulmonary cavity suggesting a potential vascular erosion "Fig 3".

The patient was taken to the angiography suite for embolization of the pulmonary artery to halt the source of bleed. He had a follow-up CT pulmonary angiogram which revealed regression of the Rasmussen aneurysm. During this time, no episodes of hemoptysis occurred.

III. DISCUSSION

Rasmussen's aneurysm, named after Fritz Valdemar Rasmussen, is an aneurysm arising from the pulmonary artery adjacent to or within a tuberculous cavity. Although it is reported in 5% of autopsy series of patients with tubercular cavities (5). Pulmonary tuberculosis presents with a variety of symptoms, which are usually insidious in onset and progression.

Tuberculosis -related hemoptysis may occur due to bronchiectasis of the bronchial artery, or rarely due to a Rasmussen aneurysm of a pulmonary artery. A weakening of the pulmonary artery wall from adjacent cavitory tuberculosis is the cause of this condition: there is a progressive weakening of the arterial wall as granulation tissue replaces both the adventitia and the media. This is then gradually replaced by fibrin, resulting in thinning of the arterial wall, pseudoaneurysm formation, and subsequent rupture with hemorrhage. Usually distributed peripherally and beyond the branches of the main pulmonary arteries (6).

CT pulmonary angiography is the investigation of choice (5). Often seen on contrasted chest images as a focal dilatation of one of the pulmonary segmentary arteries adjacent to tuberculous parenchymal change or a chronic tuberculous cavity. It is almost pathognomonic if present in the right clinical content and in the vicinity of a tuberculous cavity.

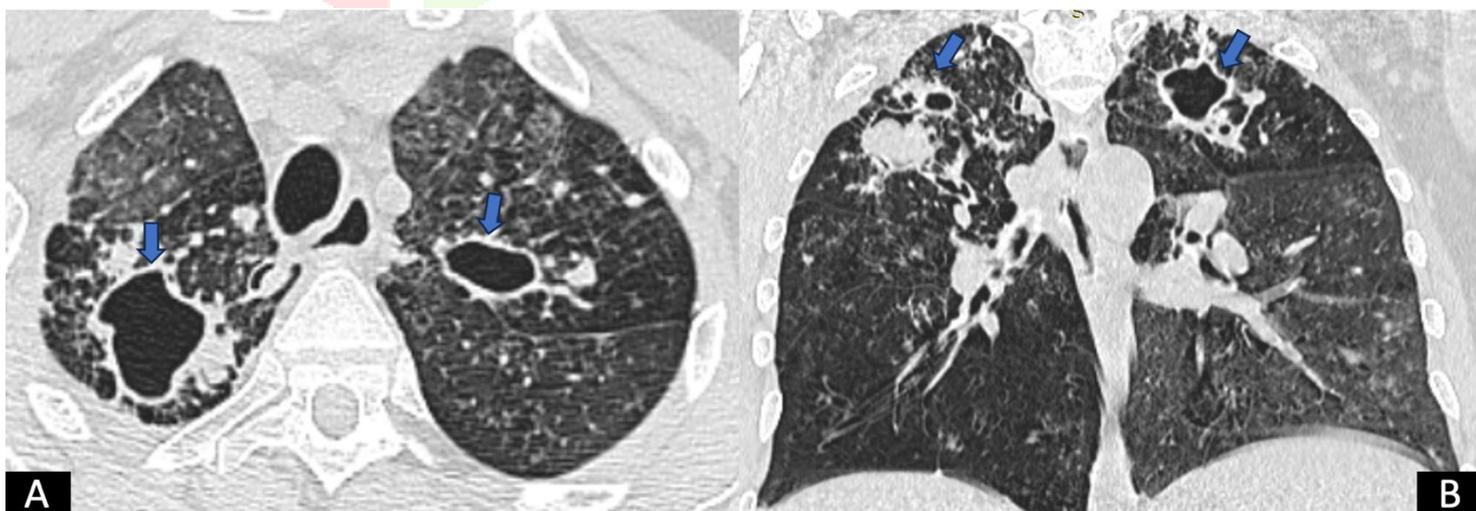
In atypical cases consider: vasculitis (Behcet disease...), pulmonary artery pseudoaneurysm (iatrogenic...), mycotic aneurysm especially in intravenous drug users. Typically, the preferred therapeutic option is an endovascular embolization. The timely diagnosis and management is key to reduce the high risk of mortality (7).

IV. CONCLUSION

Rasmussen's aneurysm is a rare and often missed cause of hemoptysis in patients with tubercular lung cavities. CT pulmonary angiography is the best investigation to confirm their existence and should be done in patients with recurrent hemoptysis. However, due to the low incidence, the suspicion of Rasmussen aneurysm is often overlooked by radiologists. Its management is frequently challenging, as the condition of the patients may deteriorate despite appropriate interventions.

Figures:

Figure 1



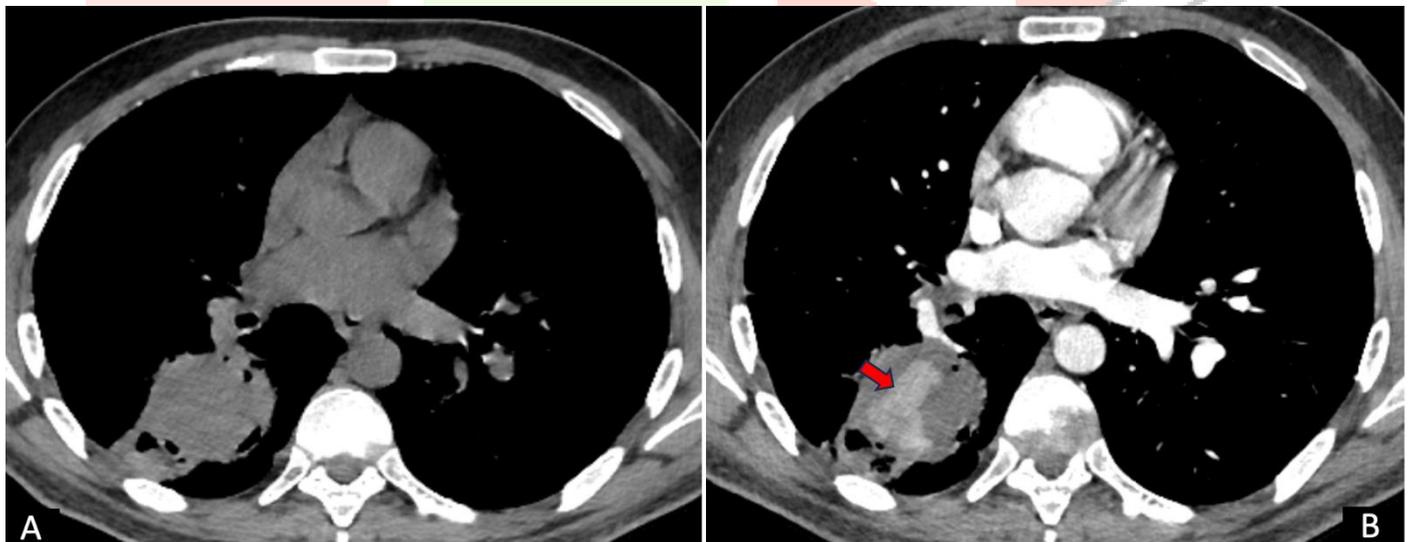
Chest CT parenchymal window in axial (A) and coronal (B) sections showing bilateral upper lobar cavitory lesions with thin, irregular walls (blue arrows).

Figure 2



Chest CT mediastinal window in coronal reconstruction after injection of contrast agent, showing an intra-cavitary vascular structure, enhancing synchronously and at a level identical to that of the arterial branches (Red arrow).

Figure 3



Chest CT mediastinal window in axial sections before (A) and after injection of contrast agent (B), showing contrast within the condensation site with clear communication with an arterial vascular structure (Red arrow).

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