Case Report

Rasmussen's Aneurysm in a Young Male

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ABSTRACT

Rasmussen's aneurysm is a rare but life-threatening complication of pulmonary tuberculosis, characterized by a pseudoaneurysm of a branch of the pulmonary artery adjacent to a tuberculous cavity. We report a case of a young male presenting with massive hemoptysis due to Rasmussen's aneurysm, emphasizing the diagnostic challenges and management strategies. He visited our hospital for hemoptysis due to pulmonary aneurysm diagnosed by contrast computed tomography (CT) and angiography. He was diagnosed with pulmonary tuberculosis by detection of Mycobacterium Tuberculosis by rapid molecular test (GeneXpert MTB/RIF) in bronchoalveolar lavage. The causes of hemoptysis due to pulmonary tuberculosis are known to be Rasmussen aneurysm, in which the blood vessel wall adjacent to the lung cavity is thinned to form an aneurysm, or bleeding from the bronchial artery. In this case, it was considered that the inflammation caused by pulmonary tuberculosis spread directly to the pulmonary artery and formed a pulmonary aneurysm. Similar cases have been rarely reported in our country.

***Keywords**: Rasmussen's aneurysm, hemoptysis, pulmonary tuberculosis, pseudoaneurysm*

Mugda Med Coll J. 2025; 8(2): 164-166.
DOI: https://doi.org/10.3329/mumcj.v8i2.85832

INTRODUCTION

Rasmussen's aneurysm was first described by Fritz Valdemar Rasmussen in 1868 as a pulmonary artery pseudoaneurysm occurring adjacent to or within tuberculous cavities.[1] Rasmussen's aneurysm is a rare, potentially life-threatening condition where a branch of a pulmonary artery dilates due to the chronic inflammatory effects of a tuberculous cavity, leading to severe coughing up of blood (hemoptysis). Although rare, it carries a high risk of rupture leading to massive and often fatal hemoptysis;[1,2] its prevalence observed in approximately 5–8% of cases based on autopsy findings.[2] With tuberculosis, as being endemic in countries like Bangladesh, awareness and timely diagnosis are crucial. Our case highlights the importance of considering Rasmussen's aneurysm in young patients with a history of tuberculosis presenting with hemoptysis, especially in TB-endemic regions.

CASE PRESENTATION

A 27-year-old young male with no past history of tuberculosis presented with recurrent hemoptysis – four episodes in the last 6 months, each containing 2–3 cups of fresh blood, last episode was about 10 days back, without hematemesis or melena. He also complained of persistent mostly dry cough with occasional scanty mucoid sputum and low-grade fever (max 101°F) relieved by antipyretics, not associated with chills and rigor. There is a history of progressive weight loss (6 kg in 2 months), but no chest pain, dyspnea, joint pain, rash, bleeding tendency, or contact with active PTB patient. On examination, the patient looks ill but is of average build (BMI 20.1), vitals stable (pulse 82/min, BP 110/70 mmHg, temperature was 99°F, SpO, was 96%), with no anemia, jaundice, clubbing, lymphadenopathy, or edema. Respiratory system shows normal chest shape, expansion, percussion resonance, and vesicular breath sounds without added sounds. Other systemic examinations reveal no abnormality. Initial hematological evaluation on 03/10/2024 revealed

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anemia (hemoglobin 8.5 g/dL, PCV 28.1%), with a normal total leukocyte count (6,310/mm^3, neutrophil 65%) and platelet count (3.1×10u /mm^3). The ESR was elevated at 66 mm in the 1st hour. Biochemical parameters showed normal renal and hepatic function (serum creatinine 1.07 mg/dL, SGPT 16 U/L), with a raised C-reactive protein of 19.9 mg/L. Coagulation profile (PT, APTT) was within normal limits. Urine examination revealed only trace albuminuria without casts or significant pyuria. Autoimmune markers (ANA, cANCA, pANCA, RA factor) were negative. A repeat CBC demonstrated improvement of anemia (hemoglobin 10.1 g/dL) with persistently raised ESR (58 mm/hr) and otherwise normal counts and differentials. Serum creatinine, liver enzymes, and glucose remained within normal limits. Microbiological studies showed negative sputum smears for AFB and culture, and GeneXpert was negative in sputum. However, BAL GeneXpert was trace positive for MTB DNA, while BAL AFB, bacterial culture, fungal stain, and malignant cytology were negative.

Imaging studies included chest radiographs on showing a prominent right hilar shadow (Fig. 1), followed by a CT chest revealing pulmonary inflammation with focal ground-glass opacity in the right lower lobe. Subsequent follow-up with chest radiograph showed a right-sided inflammatory lesion, while contrast-enhanced CT of chest demonstrated bilateral pulmonary consolidation with mediastinal lymphadenopathy (Fig. 1). Finally, CT pulmonary angiography on confirmed the presence of a pulmonary pseudoaneurysm (Fig. 1). Bronchoscopy revealed a right-sided inflammatory lesion. Cardiac workup including ECG and echocardiography was normal.

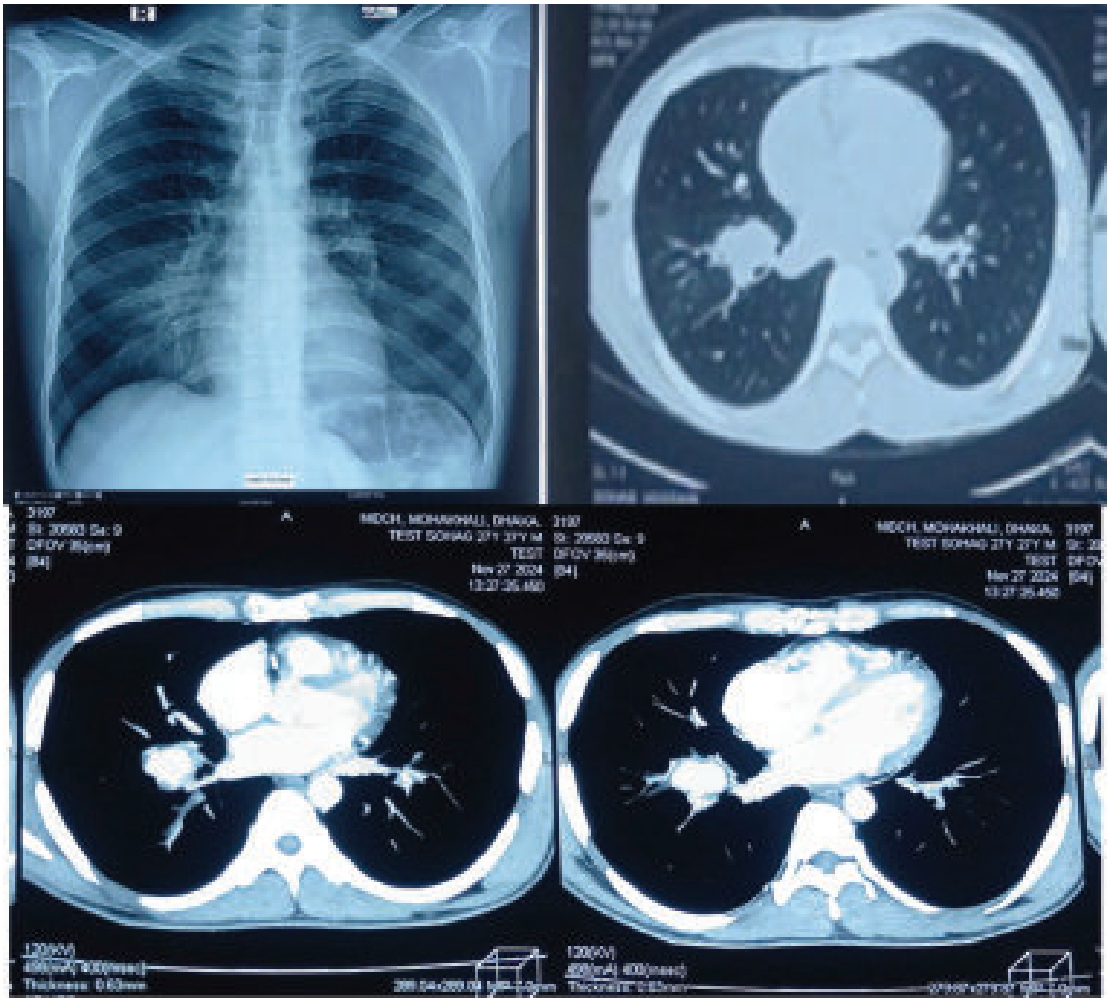

Fig. 1: *Pulmonary inflammatory lesion in x-ray of chest (upper right), contrast-enhanced chest CT revealed pulmonary consolidation in both lung, prominent on right and mediastinal zone (upper left) and CTPA revealed pulmonary pseudoaneurysm (lower two photos).*

The patient was stabilized with IV fluids, blood transfusion, and oxygen therapy. Broad-spectrum antibiotics and anti-tubercular therapy were initiated. The patient's condition was improved with no recurrence of hemoptysis during hospital stay and was referred to vascular surgeon for further intervention. Vascular surgeon advised to continue Anti-TB medication without any intervention. After 2 months of Anti-TB medication, the patient's general condition was improved. No hemoptysis in this period and he gain weight by 5kg (from 55 to 60 kg).

DISCUSSION

Rasmussen aneurysm is a rare and potentially life-threatening vascular complication of pulmonary tuberculosis (TB). It is characterized by the weakening of a pulmonary artery wall due to chronic inflammation from adjacent cavitary tuberculosis. Hemoptysis in such cases is often massive and life-threatening. Differential diagnosis of hemoptysis in TB patients includes bronchiectasis, aspergilloma, bronchogenic carcinoma and bronchial artery hypertrophy.[1-3] Imaging (CT pulmonary angiography) is the gold standard for diagnosis. Chest radiograph is often normal. Common radiographic manifestations include hilar and/or mediastinal lymphadenopathy, pleural effusion and pulmonary consolidation (27% of patients).[4,5] Treatment options include endovascular embolization (preferred), surgical resection, or conservative management in selected stable cases. Surgical repair is recommended in large aneurysms (>6 cm) if the patient is asymptomatic, or regardless of size if the patient is symptomatic due to high risk of rupture or dissection. Conservative treatment of underlying condition, is recommended for asymptomatic patients with aneurysms less than 6 cm. Several case reports have shown good outcome and regression after treatment of the underlying cause.[6-8]

CONCLUSION

Rasmussen's aneurysm is a rare but potentially fatal cause of hemoptysis in young TB patients. Early recognition and prompt intervention with endovascular embolization can be life-saving. Our objective with this case report is to describe the case of a young patient with Rasmussen aneurysm in a low-middle income country setting which could have been easily gone unnoticed. We have evaluated the radiographic findings and track the treatment and recovery of this patient in order to understand if there were further complications.

REFERENCES

1. Rasmussen V. On haemoptysis, especially when fatal, in its anatomical and clinical aspects. Edinburgh Med J. 1868;14:385-401.
2. Giraldo-Montoya ÁM, Rodríguez-Morales AJ, Hernández-Hurtado JD, López-Salazar Á, Lagos-Grisales GJ, Ruiz-Granada VH. Rasmussen aneurysm: a rare but not gone complication of tuberculosis. Int J Infect Dis. 2018;69:8-10.
3. Kawashima A, Hirose T, Horiba M. Hemoptysis from Rasmussen's aneurysm. Am J Trop Med Hyg. 2022;106(6):1579–80.
4. Gomes de Farias LP, Kaiser Ururahy Nunes Fonseca E, Chate RC, Sawamura MVY. Rasmussen Aneurysm. Radiol Cardiothorac Imaging. 2021;3(3):e210026.
5. Khalil A, Parrot A, Nedelcu C, Fartoukh M, Marsault C, Carette MF. Severe hemoptysis of pulmonary arterial origin: signs and role of multidetector row CT angiography. Chest. 2008;133(1):212-9.
6. Chatterjee K, Colaco B, Colaco C, Hellman M, Meena N. Rasmussen's aneurysm: a forgotten scourge. Respir Med Case Rep. 2015;16:74-6.
7. Amir D, Inam H, Irfani MM. Rasmussen aneurysm: a hidden hazard. Respir Med Case Rep. 2024;52: 102137.
8. Corr P. Pulmonary artery aneurysm as a cause of massive hemoptysis: diagnosis and management. Case Rep Radiol. 2011;2011:141563.