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# Massive, Life-Threatening Hemoptysis in a Case of Pulmonary Tuberculosis

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***Abstract*: Tuberculosis still remains as a significant health burden in the developing world despite medical and technological advances. Massive hemoptysis in pulmonary tuberculosis is a life-threatening complication where patient with pulmonary tuberculosis expectorate a large volume of blood due to bronchial artery or a branch of pulmonary artery erosion due to cavitary infiltration caused by tuberculosis infection. Massive hemoptysis can lead to high morbidity and mortality rates due to hemodynamic instability and respiratory compromise. Clinical evaluation and locating the exact site of bleeding can be difficult especially in a patient with massive hemoptysis and disseminated lung disease. Contrast Enhanced Computed Tomography Thorax and bronchoscopy remain the methods of choice for lateralization of the disease. Bronchial artery embolization has become cornerstone in treating patients with massive hemoptysis.**

***Keywords*: hemoptysis, pulmonary tuberculosis.**

## 1. Introduction

Massive hemoptysis is defined as the expectoration of more than 500 mls of blood within a 24-hour period. However, a clinically meaningful definition would be any bleeding resulting in respiratory compromise. This is a life-threatening medical emergency with an exceedingly high mortality of 50–80% if untreated [1].

In tuberculosis, massive hemoptysis is uncommon and usually results from pulmonary artery pseudoaneurysm (Rasmussen's) due to focal weakening of the arterial wall by the inflammatory process or the presence of bronchial artery shunting to the pulmonary veins [3].

We present a case of massive hemoptysis in a patient newly diagnosed with active pulmonary tuberculosis.

## 2. Case Report

A 42-year-old female presented with cough with intermittent hemoptysis of 1 month duration. This was associated with night sweats and fever, loss of weight and loss of appetite. The only abnormality of the initial examination was reduced air entry in both upper zones. The blood investigation result on the day of admission: Full blood count: Total white cells:8.9/L Hemoglobin:12.3/L Hematocrit:38.2% Platlet:301/L;

*Coagulation Profile*: PT: 16.4sec; INR: 1.30; APTT:28.6. Chest X-ray revealed bilateral upper zone cavities. Sputum smear microscopy for Acid-Fast Bacilli (AFB) was 2+. Anti Tuberculosis Drug Regimen (EHRZ) was started.

On the second day of admission, patient developed massive hemoptysis with an estimated blood loss of 2 liters. Investigation result post hemoptysis episode: Total white cells: 6.6/L, Hemoglobin:10.1/L, Hematocrit: 30.4%, Platlet:217/L. She developed respiratory distress and deterioration in conscious level necessitating intubation and resuscitation with blood products immediately. She was transferred to intensive care unit (ICU).

An urgent CECT THORAX AND CTPA was done and revealed large, biapical cavities and indicated a possible presence of Rasmussen's aneurysm on the inferior aspect of the right cavity. Also, the bronchial arteries were enlarged. This raised the possibility of two sources of bleeding.

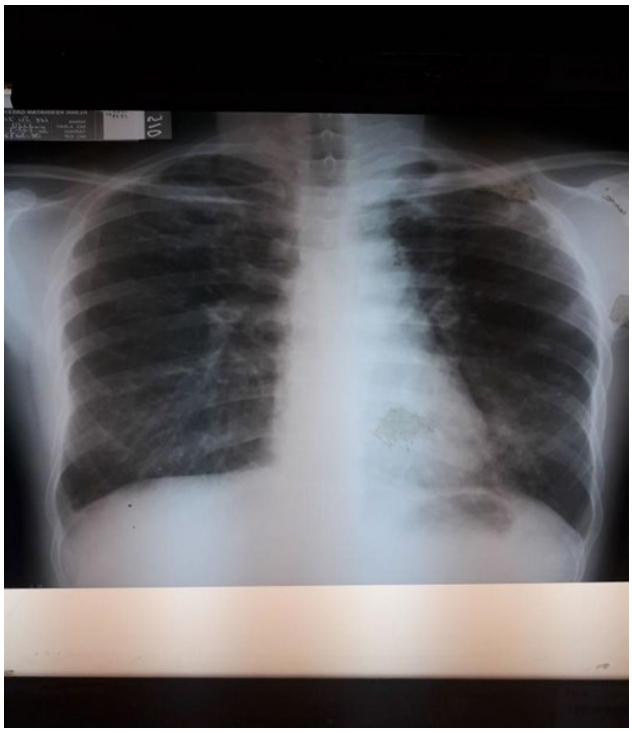

Fig. 1. Chest X Ray demonstrating bilateral upper zone cavities

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Fig. 2. CT demonstrating possibility of bleeding at right upper zone bronchus

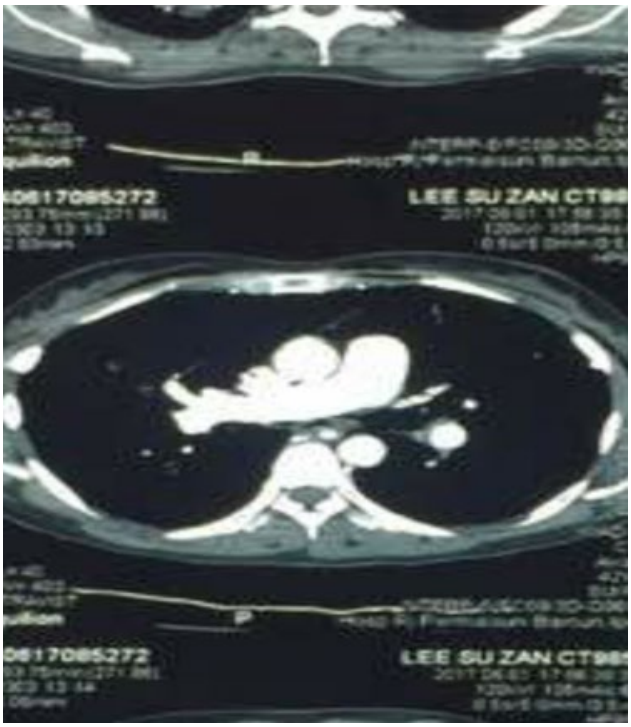

Fig. 3. CT demonstrating suspected enlarged bronchial artery

This patient was referred to the Interventional Radiologist who performed an urgent embolization. On table, a pulmonary angiogram did not reveal a Rasmussen's pseudoaneurysm. A bronchial arteriogram demonstrated a right bronchial artery-superior intercostal artery arterio-venous shunting into the pulmonary veins associated with vessel tortuosity and hypervascularity, indicating the most likely source of the massive hemoptysis. Embolization using PVA (polyvinyl alcohol) was performed via the bronchial artery using a super-selective microcatheter.


Fig. 4. CT scan chows suspected Rasmussen's aneurysm

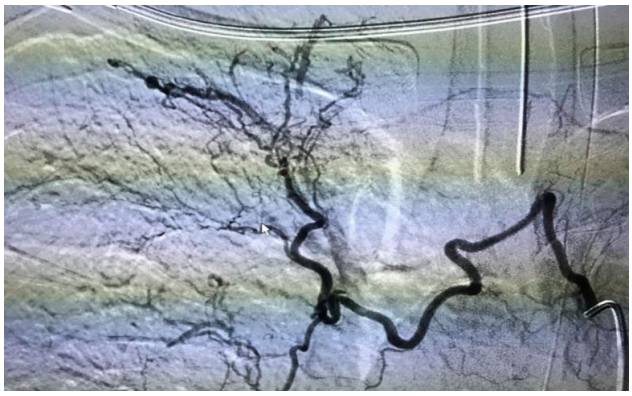

Fig. 5. Bronchial arteriogram demonstrating a right bronchial artery-superior intercostal artery arterio-venous shunting into the pulmonary veins

## 3. Discussion

Bronchial artery embolization has become the cornerstone of managing cases of massive hemoptysis in pulmonary tuberculosis. In the past, such cases would have been subjected to surgery, which confers a high mortality risk.

The role of bronchoscopy is to isolate the bleeding source using an endobronchial blocker or Watanabe spigot; however, this was not undertaken as the managing centre did not have the necessary facilities to perform the procedure and the patient was not stable for transfer.

Other important principles of management include quick resuscitation and securing of the airway.

## 4. Conclusion

This case exemplifies the importance of quick resuscitative measures and the role of bronchial artery embolization in massive hemoptysis in pulmonary tuberculosis.

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