

“Not all hemoptysis is tuberculosis—think of other etiologies.” A lesson from a chest clinic in a rural tertiary care center in central India

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Abstract

Background: The spitting of blood derived from the lungs or bronchial tree owing to pulmonary or bronchial hemorrhage is defined as hemoptysis. Blood expectoration even in small volume gives rise to a worrying symptom, and huge hemoptysis might be a life-threatening event. Hence, hemoptysis of any grade requires detailed examination. Hemoptysis is a broad-spectrum symptom and can be observed in various clinical conditions.

Objective: To evaluate the various etiological possibilities in patients of hemoptysis.

Material and Methods: We conducted a study on 462 patients attending the Department of Pulmonary Medicine, at a tertiary care center in central India, with complain of hemoptysis. The study was done during the period of June 2011 to December 2014. Patients were then categorized according to their etiologies of hemoptysis after further investigations and follow-ups.

Result: Of 462 patients of hemoptysis evaluated, 344 were male and 118 female subjects. From our study, we concluded that sputum AFB-negative posttubercular sequelae (110, 24%) was the leading cause. Similarly, bronchiectasis was found in 92 (20%) subjects; sputum-positive pulmonary tuberculosis, 73 (16%) subjects; chronic obstructive pulmonary disease/emphysema, 46 (10%); chronic bronchitis, 27 (6%); pneumonia, 27 (6%); aspergilloma, 23 (5%); and lung carcinoma, 11 (2.5%).

Conclusion: It is clear from the study that pulmonary tuberculosis and its sequelae still holds the leading cause of hemoptysis in our region of study with bronchiectasis being the second most common. Many patients of bronchiectasis are being misdiagnosed as tuberculosis and put on antitubercular treatment. Hence, raising awareness among general physicians is the point of discussion here.

Key Words: Hemoptysis, tuberculosis, bronchiectasis, aspergilloma, pseudo-hemoptysis

Introduction

Hemoptysis is the expectoration of blood that initiated in the lungs or bronchial tubes. A patient's history can aid

in diagnosing the volume of blood and distinguish between hemoptysis, pseudo-hemoptysis, and hematemesis. An attentive physical evaluation can result in the detection in most cases.^[1] The spitting of blood derived from the lungs or bronchial tree owing to pulmonary or bronchial hemorrhage is defined as hemoptysis.^[2] The term “hemoptysis” originated from the Greek “haima,” which means “blood,” and “ptysis,” which means “a spitting.” Pseudo-hemoptysis is defined as blood not from lower respiratory tract but comes from above the vocal cords: mouth, pharynx, nose, aspiration of hematemesis, and colonization by gram-negative bacteria (*Serratia marcescens*)—prodigiosin pigment production. Hemoptysis had been graded depending on severity as massive: definition of massive hemoptysis varies from 100 mL/day to more than 1,000 mL/day

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with hemodynamic compromise, usually > 400 mL/day (5%–15% cases). Hence, mild: <100 mL/day; moderate: 100–400 mL/day; and massive: >400 mL/day. Hemoptysis is a frightening symptom for patients and often is a manifestation of a significant underlying disease such as tuberculosis, bronchiectasis, and lung cancer. Hence, blood expectoration even in small volume is a worrying sign, and massive (>400 mL/day) hemoptysis can be a life-threatening event. Therefore, hemoptysis of any grade requires detailed examination. Hemoptysis is a broad-spectrum symptom. However, in India, hemoptysis is nearly identical with pulmonary tuberculosis, and patients showing this symptom are frequently suggested antitubercular therapy without appropriate workup. The purpose of this study was to identify the various etiologies of hemoptysis and correct some common misconceptions regarding management of hemoptysis in tuberculosis.

Materials and Methods

We conducted this prospective study with 462 patients at the chest clinic of Department of Pulmonary Medicine at UP Rural Institute of Medical Sciences and Research, Saifai, Uttar Pradesh, India, between the period of June 2011 and December 2014. Before doing the study, we obtained informed consent from the patients and the institutional ethical committee. Demographic data, including sex and age, were collected. Patients were also grouped into categories on the basis of their primary diagnosis (i.e., pulmonary tuberculosis, neoplasm, chronic bronchitis, bronchiectasis, and “other”). Diagnosis was made after thorough clinical evaluation and appropriate investigations such as chest radiography, computed tomography (CT) of thorax, and bronchoscopy.

Diagnosis of pulmonary tuberculosis was based on chest radiography and sputum examination for acid-fast bacilli (AFB) in our Revised National Tuberculosis Control Programme (RNTCP) laboratory under fluorescent microscopy. A chest radiograph exhibiting nodular, alveolar, or interstitial infiltrates chiefly impacting the upper area of the lung in symptomatic patients (i.e., those with cough, weight loss, and fever with night sweat) was regarded as indicative of pulmonary tuberculosis. When the chest radiograph showed inactive processes such as calcified granuloma, fibrosis, and sputum AFB negative and there were no symptoms other than hemoptysis, the patient was diagnosed as having inactive pulmonary tuberculosis. For bronchogenic carcinoma, diagnosis was based on histopathology. Bronchitis was diagnosed when a patient showed symptoms consistent with upper airway infection and a normal chest radiograph. Diagnosis of bronchiectasis was confirmed by high-resolution CT of thorax.

All patients were given conservative treatment for the control of hemoptysis, irrespective of the amount of blood expectorated, along with necessary measures for management of the primary disease. The conservative treatment comprised absolute bed rest in depended side down, tranexamic acid injection, cough suppressant such as codeine, mild sedation with alprazolam, antibiotics, and other supportive measures.

Results

During the study period, we conducted our research on 462 patients attending our Department of Pulmonary Medicine clinic. Then, based on primary diagnosis for hemoptysis, they were categorized. Pulmonary tuberculosis was the leading cause but highest being those who are inactive, sputum-negative sequelae of old-treated pulmonary tuberculosis (110, 24%). Similarly, bronchiectasis was found in 92 (20%) subjects; sputum-positive pulmonary tuberculosis, 73 (16%); chronic obstructive pulmonary disease (COPD)/emphysema, 46 (10%); chronic bronchitis, 27 (6%); pneumonia, 27 (6%); aspergilloma, 23 (5%); lung carcinoma, 11 (2.5%); URTI/LRTI, 14 (3%); mitral stenosis, 9 (2%); middle lobe syndrome, 9 (2%); lung abscess, 11 (2.38%); diffuse alveolar hemorrhage, 6 (1.3%), and cannabis smoker with bullae, 4 (0.86%). Of them, 140 (30.3%) patients—40 (28.6%) patients with inactive pulmonary tuberculosis, 50 (35.7%) patients with hemoptysis of non-tubercular etiology, and 50 (35.7%) with bronchiectasis—were misdiagnosed as active pulmonary tuberculosis and prescribed antitubercular drugs before coming to our department [Table 1]. All the patients were treated conservatively with bed rest, cough suppressants, sedative, and other supportive care.

Discussion

This study conducted at our institution is an eye opener regarding the etiological possibilities of patients presenting with hemoptysis to the clinic of a physician. During our study, we experienced default diagnosis of cases as pulmonary tuberculosis and unnecessary use of antitubercular drugs being practiced in this region. Pulmonary tuberculosis was the most common cause of hemoptysis four decades ago as shown by Rao in his study in 1960,^[3] and it is still the leading cause of it as is evident from this study, in which tuberculosis was found in 40% of patients with hemoptysis. Various studies from other developing countries have also shown pulmonary tuberculosis to be the major cause of hemoptysis.^[4–7] We also found bronchiectasis being the second most leading cause (92,20%) for hemoptysis in this region, very often being misdiagnosed and treated with antitubercular therapy by the physicians. Probably, the reasons were lack of awareness, training, and nonguideline-based prescription of antitubercular drugs. Studies from developed countries have shown malignancy and nontuberculous causes to be the leading reasons for hemoptysis.^[8] In a retrospective study from United States, acute bronchitis was the most common cause of hemoptysis, followed by bronchogenic carcinoma.^[9] The incidence of malignancy in various other studies from the developed world has ranged from 5% to 44%^[10–16]; in comparison, in this study, carcinoma lung was 2.5% only. Cases were referred to us with hemoptysis as sign of multidrug-resistant tuberculosis or active tuberculosis; however, we found 24% cases were sputum-negative healed posttubercular fibrosis, 16% were sputum positive for AFB, and 20% cases were bronchiectasis.

Table 1: Etiology of hemoptysis

Etiology—primary diagnosis	Total number (%)
Sputum AFB (–ve) pulmonary tuberculosis sequelae	110 (24)
Bronchiectasis	92 (20)
Sputum AFB +ve pulmonary tuberculosis	73 (16)
COPD/emphysema	46 (10)
Chronic bronchitis	27 (6)
Pneumonia	27 (6)
Aspergilloma	23 (5)
URTI/LRTI	14 (3)
Carcinoma lung	11 (2.5)
Mitral stenosis	9 (2)
Middle lobe syndrome	9 (2)
Lung abscess	11 (2.38)
Diffuse alveolar hemorrhage	6 (1.3)
Cannabis smoker/bullae	4 (0.86)

Hence, hemoptysis occurring in a patient during the course of treatment (of tuberculosis) does not mean that the patient is not responding or that the infection is drug resistant. There may be lack of awareness among general physicians about the various causes of hemoptysis or causes in pulmonary tuberculosis patients. One limitation of our study was that owing to nonavailability of advanced techniques in our hospital; we could not provide optimum care for patients with massive hemoptysis.

Pulmonary tuberculosis is still the major cause of hemoptysis in developing countries such as India. Hemoptysis does not always reflect underlying pulmonary tuberculosis. Hence, antitubercular treatment (ATT) should not be started without proper diagnostic workup. Hemoptysis can occur during the course of ATT; hemoptysis in a case of pulmonary tuberculosis, which otherwise shows clinical, radiological, and bacteriological improvement, does not always indicate drug-resistant tuberculosis. Hemoptysis does not require the start of ATT in a successfully healed patient who does not show any clinicoradiobacteriological indication of active pulmonary tuberculosis. Tuberculosis should not be overdiagnosed, and unnecessary use of antitubercular drugs should be stopped. Other diagnosis for hemoptysis should be evaluated. Specialist opinion is important for starting antitubercular drugs.

Conclusion

It is clear from the study that pulmonary tuberculosis and its sequelae still holds the leading cause of hemoptysis in our region of study with bronchiectasis being the second most common. Many patients of bronchiectasis are being misdiagnosed as tuberculosis and put on ATT. Hence, raising

awareness among general physicians is the point of discussion of this study.

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