ORIGINAL RESEARCH

Study of patients with active hemoptysis in a tertiary care teaching hospital at Lucknow, India

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ABSTRACT
Background: Hemoptysis is defined as the expectoration of blood, alone or mixed with mucus, from the lower respiratory tract. Hence; the present study was conducted for assessing patients with active hemoptysis in a tertiary care teaching hospital at Lucknow, India. **Materials & methods:** 200 patients who had been admitted to the OPD or casualty with complaints of active hemoptysis made up the study population. Radiological tests like X-rays and CT thorax were performed. It was determined how much of the lungs were affected. The sputum test comprised Ziehl-Neelsen staining. From the afflicted area, bronchial brushing or bronchoalveolar lavage (BAL) fluid was collected and sent for cytology and microbiological analysis. The amount of bleeding varies from a mild to moderate and massive hemoptysis. After then, the etiological diagnosis was recorded. **Results:** 50.50 percent of the cases were of tuberculosis. 24 percent of the patients were of bronchiectasis, while 6.5 percent of the patients were malignancy. Pneumonia was present in 5.5 percent of the patients. Among tuberculosis patients, 56 patients, 32 patients and 13 patients had mild, moderate and massive hemoptysis. Among bronchiectasis patients, 29 patients, 15 patients and 4 patients had mild, moderate and massive hemoptysis. Among malignancy patients, 5 patients, 6 patients and 2 patients had mild, moderate and massive hemoptysis. **Conclusion:** The diagnostic evaluation of patients with active hemoptysis remains focused on the localization of the bleeding site and underlying cause.

Key words: Hemoptysis, Active

INTRODUCTION

Hemoptysis is defined as the expectoration of blood, alone or mixed with mucus, from the lower respiratory tract. It occurs in around 10% of patients with chronic lung diseas and is found in ca. 0.1% of all outpatients and almost 0.2% of all inpatients each year. Hemoptysis is a potentially life-threatening emergency and requires rapid diagnosis and treatment. Although over 90% of hemoptyses are self-limiting, both the diagnosis and the treatment of massive hemoptysis are challenging.[1- 3]

Depending on the underlying disease, hemoptysis is a result of several different pathologic mechanisms. Remember that the lung contains two separate vascular systems: the pulmonary and the bronchial vessels. Hemoptysis can occur with involvement of either. Infarction of lung tissue with hemoptysis can occur in numerous diseases. Pulmonary emboli often present with hemoptysis as a result of ischemic pulmonary parenchymal necrosis. A similar ischemic necrosis can be seen in all idiopathic vasculitides involving the pulmonary vessels, including Wegener's granulomatosis. Infections causing blood vessel invasion with infarction include primarily Staphylococcus aureus, Pseudomonas aeruginosa, Aspergillus fumigatus, and the phycomycetes.[4- 6] Hence; the present study was conducted for assessing patients with active hemoptysis in a tertiary care teaching hospital at Lucknow, India.

MATERIALS & METHODS

The current study was carried out to evaluate patients with active hemoptysis in a teaching hospital of tertiary care in Lucknow, India. 200 patients who had

been admitted to the OPD or casualty with complaints of active hemoptysis made up the study population. Detailed medical history, history of upper respiratory bleeding, history of bleeding diathesis, history of childhood pneumonia, history of immunosuppression, history of fever, chest pain, cough, and wheezing are the criteria used. Additionally noticed were a history of evening fever spikes, weight loss, poor appetite, and contacts with TB patients. Radiological tests like X-rays and CT thorax were performed. It was determined how much of the lungs were affected. The sputum test comprised Ziehl-Neelsen staining. It was unable to send the patient with active hemoptysis who produced blood-mixed sputum for the CB-NAAT test. From the afflicted area, bronchial brushing or bronchoalveolar lavage (BAL) fluid was collected and sent for cytology and microbiological analysis. The amount of bleeding varies from a mild to moderate and massive hemoptysis. After then, the etiological diagnosis was recorded.

RESULTS

A total of 200 patients were analyzed, out of which 50.50 percent of the cases were of tuberculosis. 24 percent of the patients were of bronchiectasis, while 6.5 percent of the patients were malignancy. Pneumonia was present in 5.5 percent of the patients. Among tuberculosis patients, 56 patients, 32 patients and 13 patients had mild, moderate and massive hemoptysis. Among bronchiectasis patients, 29 patients, 15 patients and 4 patients had mild, moderate and massive hemoptysis. Among malignancy patients, 5 patients, 6 patients and 2 patients had mild, moderate and massive hemoptysis.

Table 1: Clinical cases with complaints of active hemoptysis

Disease	Number	Percentage
Tuberculosis	101	50.5
Bronchiectasis	48	24
Malignancy	13	6.5
Pneumonia	11	5.5
Fungal ball	10	5
Vasculitis	7	3.5
Non-specific	10	5
Total	200	100

Table 2: Severity

Disease	Mild	Moderate	Severe
Tuberculosis	56	32	13
Bronchiectasis	29	15	4
Malignancy	5	6	2
Pneumonia	8	2	1
Fungal ball	1	6	3
Vasculitis	2	4	1
Non-specific	5	4	1
Total	106	69	25

DISCUSSION

In clinical practice hemoptysis is a common symptom, which may require further investigation. It is defined as the expectoration of blood that originates from the lower respiratory tract. Bleeding from the upper airways is excluded from this definition. In most cases hemoptysis is a self-limiting event but in fewer than 5% it may be severe or massive, representing a life-threatening condition that warrants urgent investigations and treatment. Massive hemoptysis usually refers to the expectoration of a large amount of blood and/or to a rapid rate of bleeding. The blood volume expectorated over 24 hours is generally used for distinguishing massive and nonmassive hemoptysis, although the choice of a cutoff value is controversial. Volumes of 100 to 1000 mL of blood have been described as indicative of massive hemoptysis, but no specific volume has been universally accepted. Furthermore, a large volume of expectorated blood alone should not define massive hemoptysis, but rather an amount of blood sufficient to cause a condition that threatens the patient's life can be a more correct and functional definition of severe hemoptysis.[7- 10]

Etiologies of massive hemoptysis and their record in the literature have evolved over time. While prevalence of tuberculosis (TB) has declined in developed countries, with improved medical care of chronic lung diseases, the incidence and ultimately prevalence of bronchiectasis has increased. Through the 1960's, three etiologies accounted for 90% of the cases of massive hemoptysis: TB, bronchiectasis, and lung abscess. With advancing technology and the more frequent use of CT scanning, both etiology and pathophysiology of massive hemoptysis is better described. In a retrospective cohort study, conducted over a 14-year period at a tertiary university hospital in Paris, France, investigators showed that of 1,087

patients, bronchiectasis (20%), cryptogenic (18%), cancer (17%), active TB (12%), and sequelae of TB (13%) were the most common causes of massive hemoptysis in that patient population. The average cumulative volume of hemoptysis in these patients was 218 mL.[10- 13]

A total of 200 patients were analyzed, out of which 50.50 percent of the cases were of tuberculosis. 24 percent of the patients were of bronchiectasis, while 6.5 percent of the patients were malignancy. Pneumonia was present in 5.5 percent of the patients. Among tuberculosis patients, 56 patients, 32 patients and 13 patients had mild, moderate and massive hemoptysis. Among bronchiectasis patients, 29 patients, 15 patients and 4 patients had mild, moderate and massive hemoptysis. Among malignancy patients, 5 patients, 6 patients and 2 patients had mild, moderate and massive hemoptysis. Muriel Fartoukh et al reviewed a large series of patients managed in a uniform way to describe the clinical spectrum and outcome of haemoptysis in this setting, and better defined the indications for bronchial artery embolisation (BAE). A retrospective chart review of 196 patients referred for severe haemoptysis. A follow-up by telephone interview or a visit. Patients (148 males) were aged 51 (± sd, 16) years, with a median cumulated amount of bleeding averaging 200 ml on admission. Bronchiectasis, lung cancer, tuberculosis and mycetoma were the main underlying causes. In 21 patients (11%), no cause was identified. A first-line bronchial arteriography was attempted in 147 patients (75%), whereas 46 (23%) received conservative treatment. Patients who underwent BAE had a higher respiratory rate, greater amount of bleeding, persistent bloody sputum and/or evidence of active bleeding on fiberoptic bronchoscopy. When completed (n = 131/147), BAE controlled haemoptysis in 80% of patients, both in the short and long (> 30 days) terms. Surgery was mostly performed when bronchial arteriography had failed and/or bleeding recurred early after completed BAE. Bleeding was controlled by conservative measures alone in 44 patients. The ICU mortality rate was low (4%). Patients with evidence of more severe or persistent haemoptysis were more likely to receive BAE rather than conservative management.[14]

CONCLUSION

The diagnostic evaluation of patients with active hemoptysis remains focused on the localization of the bleeding site and underlying cause.

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