

Clinico-radiological and pathological profile of patients of hemoptysis admitted in a tertiary care centre in Nepal

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Abstract

Introduction: Hemoptysis is a common and alarming symptom in patients visiting outpatient as well as emergency department. It is a non-specific complaint that can occur in different clinical conditions including cardiopulmonary and hematological diseases. The aim of our study is to know the clinico-radiological and pathological profile of patients presenting with hemoptysis.

Methods: A prospective observational study was conducted in TUTH from 20th July, 2016 to 10th March, 2017. Patients presenting with hemoptysis were admitted via emergency and OPD were evaluated for the cause of hemoptysis via radiological and clinical clues. HRCT/CECT-chest and Bronchoscopy were done for selected patients. Results obtained were evaluated.

Results: A total of 115 patients were enrolled in this study. Mean age of study population was 50.49 ± 14.07 years and mean amount of hemoptysis was 28.27 ± 14.07 ml. Post TB fibrobronchiectasis was found to be the most common cause of hemoptysis in 29.6%. HRCT/CECT-chest was the most sensitive diagnostic test when employed alone with positive yield of 83.3%. However, it failed to locate three cases of lung cancer. When combining a CT study together with a bronchoscopy, the positive yield increased to 100%. Patients diagnosed with lung carcinoma had significant history of smoking, 88.88% patient with diagnosis of lung carcinoma had history of smoking.

Conclusion: Hemoptysis is a common symptom arising from varied clinical conditions. Even small amount of hemoptysis should not be ignored and investigated properly. The combined use of bronchoscopy and CT-chest has the best yield in evaluating hemoptysis. In our clinical context, Post TB fibrobronchiectasis was the most common cause of hemoptysis.

Keywords: Hemoptysis, Post TB fibrobronchiectasis, chest xray, Bronchoscopy

Introduction

Hemoptysis is a frightening symptom for patients and often is a manifestation of a significant underlying disease such as bronchogenic carcinoma¹. Hemoptysis is defined as expectoration of blood from respiratory tract, a spectrum that varies from blood streaked sputum to coughing out large amount of blood². The spectrum of hemoptysis varies from blood streaked sputum to coughing out large amount of blood. Massive hemoptysis is defined as hemoptysis of >200-600 ml in 24 hours².

The etiology of hemoptysis varies among different series according to time of publication, the geographic location and the diagnostic tests employed³. Hemoptysis is one of the dreaded manifestation of cardiopulmonary disease and often is a manifestation of significant underlying disease. Hemoptysis is a nonspecific symptom and can occur in different clinical conditions. Worldwide, the most common cause of hemoptysis is infection with *Mycobacterium tuberculosis*². A study conducted between 1980-1995 in Jerusalem, Israel

published in Chest showed the most common cause of hemoptysis to be bronchiectasis, followed by lung cancer and bronchitis³ whereas previous studies done showed active tuberculosis to be the major cause of hemoptysis. Similarly a prospective study conducted in 64 patients in Manipal teaching hospital in Nepal in Aug 2008-May 2009 showed Acid fast bacilli to be the major cause of hemoptysis in sputum analysis⁴.

Methods

The research objective was to identify the causes of hemoptysis in our referral centre and usefulness of various diagnostic modalities in evaluation of hemoptysis. The site of the research was medical wards at Tribhuvan University Teaching Hospital, Kathmandu Nepal from 20th July, 2016 to 10th March, 2017. Hemoptysis was defined by blood streaked sputum to coughing out large amount of blood². All patients above 14 years giving consent to participate in the study were included in the study. The patient admitted in TUTH ward from OPD and Emergency were evaluated clinically and investigated with Sputum AFB, radiological tool (chest X-ray, HRCT/CECT-chest) and supplemented with Bronchoscopy where needed to diagnose the cause of hemoptysis.

Detailed history of the patient was taken at the time of admission including past history of PTB, lung malignancy, bleeding disorder, use of anticoagulant medication for any clinical condition, associated vasculitis. Initially patients were investigated for more common causes like pneumonia and pulmonary tuberculosis with sputum analysis and chest X-ray. In selected cases HRCT/CECT and Bronchoscopy was done to increase the diagnostic yield for the cause of hemoptysis. Ethical clearance was taken from the Institutional Review Board (IRB), Institute of Medicine, Tribhuvan University on 19 July, 2016 before initiating the research and the ethical guidelines were well considered.

Statistical Analysis

The data was entered and analyzed using IBM SPSS 20. The variables studied were age, hemoptysis amount (ml), gender, investigation tools (chest x-ray, HRCT/CECT-chest, Bronchoscopy), diagnosis. Mean±S.D. were calculated for age, hemoptysis amount (ml).

Results

A total of 115 patients enrolled in the study, predominantly were Male 69 (60%) and 46 (40%) were Female (Table 1). Mean age of the patient was 50.49±14.07 years (Table 1). Mean amount of hemoptysis was 27.19±8.4 ml.

Table 1. Patient demographic characteristics

Total number of patients 115	
Male	69
Female	46
Male to Female ratio	1.5:1
Mean age at presentation (in years)	50±14.07

Most common cause of hemoptysis was found to be Post TB sequele (Fibrobronchiectasis) in 29.6% followed by Pulmonary Tuberculosis (Smear+ve/Smear-ve), lung carcinoma, bronchiectasis, pneumonia and other miscellaneous causes (bleeding disorders, vasculitis, anticoagulant therapy, Mycetoma, Pulmonary Embolism, CCF, Lung abscess, Allergic Bronchopulmonary Aspergillosis) (Fig.1). As most of the hemoptysis patients were diagnosed in OPD where Tuberculosis is the commonest cause of hemoptysis.

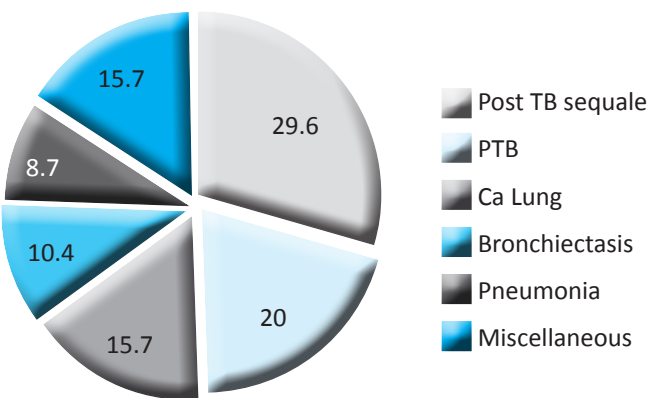


Figure 1. Causes of hemoptysis in the study population

Positive history of smoking was seen in 88.88% of patient diagnosed with lung carcinoma followed by Post TB fibrobronchiectasis in 73.52%.

Chest X-ray was diagnostically useful in 50% of cases while evaluating cases suspicious of lung carcinoma. HRCT/CECT-chest were the most sensitive diagnostic test when employed alone with positive yield of 83.3% in such cases. However, it failed to locate 3 cases of

lung cancer. When combining a CT study together with a bronchoscopy, the positive yield increased to 100%.

Discussion

Hemoptysis is an important symptom and often indicates a serious disease. The amount of hemoptysis may vary from a small streak or blood tinge to a massive hemorrhage but the actual quantity is of little diagnostic importance⁵. This study conducted at our institute is an eye opener regarding the etiological possibilities of patients presenting with hemoptysis to the physician. Pulmonary tuberculosis was the most common cause of hemoptysis four decades ago as shown by Rao in his study in 1960,⁶ and it is still the leading cause of it as is evident from this study, in which old tuberculosis (Post TB fibrobronchiectasis) was found in 29.6% of patients with hemoptysis. Various studies from other developing countries have also shown pulmonary tuberculosis to be the major cause of hemoptysis⁷⁻¹⁰. Studies from developed countries have shown malignancy and nontuberculous causes to be the leading causes of hemoptysis¹¹. The incidence of malignancy in various other studies from the developed world has ranged from 5% to 44%¹²⁻¹⁸; in comparison, in this study, carcinoma lung was only 15.7%.

Evaluation of a case of hemoptysis requires a detailed medical history, clinical examination and diagnostic tool. Smoking is significantly associated with development of lung cancer¹⁹ which also corresponds to the present study. Exploring the past history of tuberculosis is of utmost importance as most case of hemoptysis in our study was due to Post TB fibrobronchiectasis. Rare causes of hemoptysis like bleeding disorders, ITP, Pulmonary Embolism should also be investigated in case of diagnostic dilemma. In old tuberculosis, the source of bleeding is usually bronchiectatic lesion which is directly correlated with radiological features found in chest x-ray²⁰. In suspicious cases of lung carcinoma, CECT chest should be supplemented with bronchoscopic evaluation to increase the diagnostic yield which corresponds to present study³.

The major limitation of the study is the choice of the study site, as Tribhuvan University Teaching Hospital being a tertiary referral centre, mostly complicated cases of hemoptysis reach our centre, hence the sample cannot be representative of the general population. Among the

general population Tuberculosis is still a leading cause of hemoptysis².

Conclusion

Hemoptysis is an alarming presenting symptom to both patient and physician. Even a small streak of blood in sputum should not be ignored for the fear of missing significant disease like lung carcinoma. Hemoptysis may cease temporarily but a possible life threatening condition may still be present, requiring complete evaluation and probably treatment. Patients with a positive smoking history are at increased risk for primary lung carcinoma¹⁹ and therefore need an extensive evaluation and follow-up. The combined use of bronchoscopy and chest CT probably gives the best diagnostic yield³.

Conflict of interest: None declared.

References

1. Johnson JL. Manifestation of hemoptysis. *Postgrad Med.* 2000; 112:101–13.
2. Harrison TR Principles of internal medicine, Hemoptysis. 19th ed., New York Chicago San Francisco Lisbon London: Mcgraw-Hill 2015; 245-247
3. Boaz H, Iftah B, Mendel G, Mordechai K. Hemoptysis: Etiology, Evaluation, and Outcome in a Tertiary Referral Hospital. *Chest.* 1997; 112:440-44.
4. Bhatta DR, Singh TSK, Gokhale S. Hemoptysis: is it tuberculosis? *Int J Infect Microbiol* 2012; 1(2):63-67
5. Carlton R, Anne ST. The Clinical significance of hemoptysis. *N Engl J Med.* 1952; 247:790-793.
6. Rao PU. Haemoptysis as a symptom in a chest clinic. *Indian J Chest Dis.* 1960; 2:219.
7. Ashraf O. Hemoptysis: a developing world perspective. *BMC Pulm Med.* 2006; 6:1.
8. Abal AT, Nair PC, Cherjan J. Haemoptysis: Aetiology, evaluation and outcome a prospective study in a third-world country. *Respir Med.* 2001; 95:548–52.
9. Stebbings AE, Lim TK. Cause, treatment and outcome of patients with life-threatening haemoptysis. *Singapore Med J.* 1999; 40:67–9.
10. Domoua K, N'Dhatz M, Coulibaly G, Aka-Danguy E, Traore F, et al. Hemoptysis: main etiologies observed in a pneumology department in Africa. *Rev Pneumol Clin.* 1994; 50:59–62.

11. Hirshberg B, Biran I, Glazer M, Kramer MR. Hemoptysis: etiology, evaluation, and outcome in a tertiary referral hospital. *Chest*. 1997; 112:440–4.
12. Johnston RN, Lockhart W, Ritchie RT, Smith DH. Haemoptysis. *Br Med J*. 1960; 1:592–5.
13. Santiago S, Tobias J, Williams AJ. A reappraisal of the causes of hemoptysis. *Arch Intern Med*. 1991; 151:2449–51.
14. Pursel SE, Lindskog GE. Hemoptysis. A clinical evaluation of 105 patients examined consecutively on a thoracic surgical service. *Am Rev Respir Dis*. 1961; 84:329–36.
15. Van Kralingen KW, van Kralingen-Heijboer AC, Zimmerman M, Postmus PE. Management of hemoptysis in a Third World city hospital: a retrospective study. *Tuber Lung Dis*. 1995; 76:344–8.
16. Souders CR, Smith AT. The clinical significance of hemoptysis. *N Engl J Med*. 1952; 247:790–3.
17. Moersch HJ. Clinical significance of hemoptysis. *JAMA*. 1952; 148:1461–5.
18. Baric D. The origin of hemoptysis in patients admitted to the pneumo-phthisiology department of the Zadar Hospital between 1970 and 1980. *Bull IUAT*. 1984; 59:205–6.
19. Furrukh M. Tobacco smoking and lung cancer, Sultan Qaboos Univ Med J. 2013 Aug; 13(3): 345–358
20. Tafti SF, Marashian M, Mirsaedi SM, Dizaji MK. Short Outcome and Evaluation of Hemoptysis in Patients with Old Pulmonary TB. *Tanaffos* (2005) 4(15), 43–48.