Original Article

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Clinical Profile of Hemoptysis in a Tertiary Care Hospital in Nepal

Bidesh Bista[1], Pradeep Shrestha[1], Niraj Karmacharya[1],Dipak Paudel[1], Ramesh Pant[2], Janer Kurumbang[1]

[1] *Department of Internal Medicine, Civil Service Hospital.*
[2] *Department of Family Medicine and Emergency, Civil Service Hospital.*

ABSTRACT

Introduction: Hemoptysis is a frequent, frightening and alarming symptom in clinical practice. It may range from streaks of blood in sputum to massive life-threatening hemoptysis. Bronchiectasis and active tuberculosis are still the main causes of hemoptysis in developing countries.

Methods: This was a cross sectional observational study done in Civil Service Hospital from January 2019 to August 2021. All adult patients above 18 years with hemoptysis were enrolled in the study. Detailed history, examinations and relevant investigations were carefully registered in structured proforma.

Results: Total of 197 patients were enrolled in our study with 154 (78.1%) male patients. Hypertension and diabetes were the most common comorbid condition with 43.65% and 31.97% respectively. 42 (21.31%) patients were active smokers. Cough was the most common symptoms followed by anorexia and dyspnea present in 98.98%, 22.84% and 20.31% respectively. Most patients presented with mild hemoptysis with only 12 (6.09%) patients presented with severe hemoptysis. In our study 129 (65.48%) patients had radiological evidence of bronchiectasis. 58(29.44%) patients had history of tuberculosis. 19 (9.64%) patients presented with malignancies.

Conclusion: Bronchiectasis was the most common cause of hemoptysis in our study. Most of the hemoptysis were of mild variety and was managed conservatively.

Keywords: hemoptysis, bronchiectasis, tuberculosis

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Correspondence:
Dr Bidesh Bista.
Department of Internal Medicine
Civil Service Hospital
Email:bideshbista@gmail.com
ORCID : https://orcid.org/ 0000-0003-4232-3871

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INTRODUCTION

Hemoptysis is a common clinical condition encountered by respiratory physician in day-to-day practice. Hemoptysis is expectoration of blood derived from the lungs as a result of pulmonary or bronchial vasculature disruption.[1] No matter how small the quantity of hemoptysis, it is always alarming and frightening to the both patients and physician. Even minimal amount of hemoptysis can be a manifestation of severe underlying lung disease. It is also often seen that patients tend to neglect any respiratory symptoms but are generally present in hospital even in slightest amount of hemoptysis.

Hemoptysis ranges from minimal streaks of blood in sputum to massive life-threatening expectoration of blood. Approximately 1.5% of patients presenting with hemoptysis have massive hemoptysis.[2] Common causes of Hemoptysis depend upon geographical regions and age category. In developing countries still tuberculosis and post tubercular bronchiectasis are the leading causes of hemoptysis. Lung cancer, bronchitis and non-tubercular bronchiectasis are common causes of hemoptysis in developed countries. In children congenital cardiopathies and bronchiectasis (cystic fibrosis) are supposed to be the main reason for hemoptysis.[3]

Even through detailed investigations nearly 20 to 30 percent of hemoptysis patients do not have identifiable etiology.[3-6] In most cases of mild and moderate hemoptysis control over bleeding is achieved with conservative measures.[3,7] Therapeutic measures like bronchoscopy intervention, surgery lobectomy and bronchial arterial embolization may be necessary in severe cases.In this study we tried to document the demographic profile, etiology, clinical profile and treatment of patients presenting with hemoptysis in our hospital.

METHODS

This is a cross sectional observational study carried out in Civil Service Hospital over the period of two and half years from January 2019 to August 2021. All adult patients above the age of 18 years presented with hemoptysis were enrolled in the study. Detailed history, examination and relevant investigations was done and recorded in structured proforma. There is no general consensus on the categorization of hemoptysis till date.[8] Volume to define severe hemoptysis is different in different literatures. We divided mild as less than 50ml of blood in 24 hours, moderated as less than 300 ml in 24 hours and severe as more than 300 or any amount of blood with cardio-pulmonary compromise. We found that expectorated volume of blood range of 100 to 600 ml in 24 hours were classified as severe hemoptysis most of studies.[4,9-12] The study was approved by hospital institutional research review board.

RESULTS

There were total of 197 patients in 2 and half years from January 2019 to August 2021 enrolled in our study presenting with hemoptysis in Civil Service Hospital. There were 154 (78.17%) male and 43 (21.82%) female patients. The age group in our study ranged from 16 to 84 years with mean age group of 53.40 years and most patients prevailing in age group 50 to 59 years. (Table 1)

Hypertension was the most common co-morbid condition present in our study followed by Diabetes Mellitus, which were present in 86 (43.65%) and 63 (31.97%) patients respectively. 22 (11.16 %) patients had both hypertension and diabetes Mellitus. (Table 2) 67(34.01%) patients were non-smokers in our study, 42(21.31%) patients were current smokers and 88(44.67%) were reformed smokers. (Figure 1)

Cough which was present in 193 (98.98%) patients and was the predominate symptom among our patients. Anorexia and dyspnea were other two important symptoms experienced by our patients with frequency of 22.84% and 20.31% respectively. (Table 3) 126 (63.95%) patients presented to with us with mild hemoptysis. 59 (29.94%) patients presented with moderate and 12 (6.09%) patients presented with severe hemoptysis. 5(2.53%) patients were sent for bronchial arterial embolization after admission to our hospital. (Figure 2)

In our study, most common cause of hemoptysis was Bronchiectasis which was present in 129 (65.48%) patients. Among them 58 (29.44%) patients had history and radiographic morphology consistent with old tubercular bronchiectasis and gave clear history of taking Anti-tubercular drugs for 6 to 12 months. (Table 4)
Other 71(36.04%) patients presenting with hemoptysis and bronchiectasis did not have history of past tuberculosis. 68 patients gave

history of pneumonia for which they had taken antibiotics in the past 10 years, three patients do not recall having sign and symptoms of infection but had bronchiectasis changes in radiological films suggestive of old infection.19 (9.64%) patients presented with mass lesions in radiological films. Bronchoscopy was done 12 of these patients and seven patients were subjected to USG/ CT guided biopsy, all of the patients were proven to have malignant lesion.Gene Xpert/MTB for mycobacterium tuberculosis came out to be positive in 11(5.58%) of our patients. Lobar pneumonia was seen in 8(4.06%) patients who were treated with antibiotics. 3(1.52%) patients of hemoptysis after proper evaluation had pulmonary embolism, these patients had mild hemoptysis with atypical chest pain and severe shortness of breath. Radiological evidence of aspergilloma was present in 7(3.55%) patients, 6(3.04%) patients had lung abscess and 3(1.52%) patients were on anticoagulants. 11 (5.58%) patients in our study had no detectable cause.

Table 1. Age distribution:

Age	n	%
16-20	6	3.04
20 – 29	8	4.06
30 – 39	24	12.18
40 – 49	41	20.81
50 – 59	54	27.41
60 – 69	26	13.19
70 – 79	27	13.70
>80	13	6.59

Figure 1.Smoking Profile

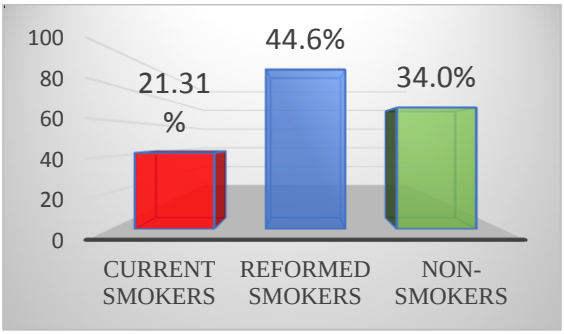


Table 2. Types of Co-morbidities

Comorbidities	n	%
Hypertension	86	43.65
Diabetes Mellitus	63	31.97
Heart Failure	11	5.58
CLD	9	4.50
COPD	28	14.21
ILD	6	3.04
CRF	5	2.53
Obesity	5	2.53

Table 3. Other clinical symptoms with hemoptysis.

Symptoms	n	%
Cough	193	97.96
Dyspnea	40	20.30
Fever	11	5.58
Chest pain	23	11.67
Night Sweats	4	2.03
Malaise	28	14.21
Anorexia	45	22.84

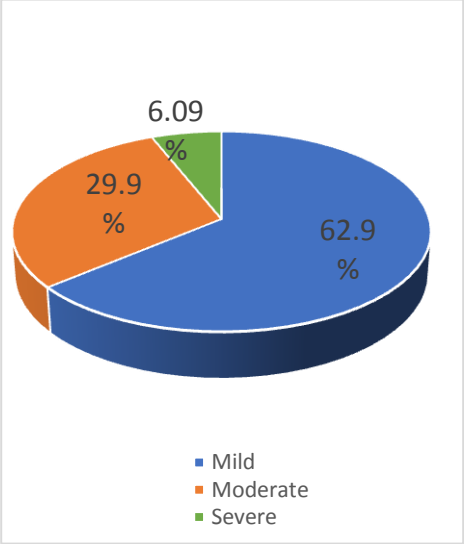
Table 4. Causes of Hemoptysis.

SN	Causes	N	%
1.	Old Tubercular Bronchiectasis	58	29.44
2.	Post Infectious Bronchiectasis	71	36.04
3.	Malignancy	19	9.64
4.	Active Tuberculosis	11	5.58
5.	Pneumonia	8	4.06
6.	Pulmonary Embolism	3	1.52
7.	Idiopathic	11	5.58
8.	Aspergilloma	7	3.55
9.	Lung Abscess	6	3.04
10.	Oral Anticoagulation	3	1.52

Table 5. Severity according to causes

	Mild	Moderate	Severe	total
Post TB Bronchiectasis	35	21	2	58
Post Infectious Bronchiectasis	55	11	5	71
Malignancy	8	8	3	19
Active Tuberculosis	6	5	-	11
Pneumonia	8	-	-	8
Pulmonary Embolism	3	-	-	3
Idiopathic	2	9	-	11
Aspergilloma	2	4	1	7
Lung abscess	5	1	-	6
Oral Anticoagulant	2	-	1	3
Total	126	59	12	197

Figure 2. Severity of Haemoptysis



DISCUSSION

Hemoptysis is a distressing symptom to any patients. In three and half years we had 197 patients of hemoptysis in our hospital. Among them 154 (78.1%) patients were male patients which was ratio of male: female ratio approximately 3:1. Similar studies conducted in India also had male patients 4.2 times more than females[13,14]. Ghimire et al in another study also had male patients 75% in comparison to female patients[3]. Joseph T et al in similar study about hemoptysis had male patients of 70%[1]. Male predominance in hemoptysis patients could be due to the fact that male population likely to be more smokers and do heavy duties in hostile environment for prolong period of time than females. The mean age group in our study was 53.40 years with most patients belonging to age

Most common comorbid condition in our study was Hypertension followed by Diabetes Mellitus and COPD. In our study, 42(21.31%) patients were current smokers and 74 (37.56%) patients were reformed smokers. So, comorbidity along with large smoking and reformed smoking population attributed to risk of hemoptysis[6].

Cough was the most common symptoms experienced by our study population present in 193 (98.98%) patients. Hemoptysis is a distressing and irritating symptom. When blood is present in airways generally cough reflex expectorate the blood. 4 patients did not give the history of cough. According to them bleeding was present from mouth in morning hours after waking up without cough or other symptoms. These patients were asymptomatic during day and night time. There upper respiratory examinations were normal and CT scan chest showed consolidation in 2 patients and bronchiectasis changes in 2

patients. Dyspnea was present more with COPD patients in our study. Malaise (14.21%) and anorexia (22.84%) were transient symptoms present during episodes of hemoptysis in our study.

One of the disputed subjects in hemoptysis is its classification according to severity[4,8,11-17]. Numerous classifications have been proposed but none are universally accepted. Severity of hemoptysis is often difficult as it is often over or under estimated by the frightened patients. After going through most available classification, we considered the following classification would be best suitable and practical to our study. Mild hemoptysis if expectorated amount is 5 to 50 ml per 24 hours, Moderate if expectorated amount is 50 to 300 ml per 24 hours and severe if amount is more than 300 ml or hemodynamically unstable[8]. Mortality rate as high as 75% was recorded in patients having a bleeding rate of more than 600 ml within 16 hours in one study.[18]Life threatening hemoptysis can occur even if the amount is as small as 100 ml if it causes abnormal gas exchange, air way obstruction or hemodynamic instability.[19]

In our study only 12 (6.09%) patients presented with severe hemoptysis and were admitted in Intensive Care Unit while 9 (4.5%) patients had to be referred for bronchial arterial embolization. Rest of the patients were treated conservatively in outpatient department or medical wards with oral/intravenous or nebulization of transemic acid, ethamsylate and cough suppressants.

Etiologically most common cause of hemoptysis in our study was bronchiectasis found in 65.48% of our patients. Bronchiectasis was also the most common cause for hemoptysis in studies done by Joseph et al, Bondade et al, Hirschberg et al, MacGuinness at el.[1,6,20,21] Bronchiectasis is seen to be the leading cause for hemoptysis in studies done in developing countries. Tuberculosis is one of the leading causes for bronchiectasis in our part of the world[22]. Some handful of patients may not even be aware of having the disease in the past and present with bronchiectasis and hemoptysis in later part of the life after tuberculosis heals itself [7]. In developing countries due to poor health system and lack of proper treatment many respiratory illnesses in childhood and young adults like severe pneumonia, post measles and whooping cough apart from tuberculosis often lead to fibro- bronchiectasis. In our study 71(36.04%) patients had bronchiectasis in radiological film but had no history of tuberculosis. We tried to rule out other causes of bronchiectasis like autoimmune diseases, malignancies, allergic aspergillosis in these group of patients before labelling as post infectious bronchiectasis.

Active pneumonia and tuberculosis presenting as hemoptysis were comparatively low in our study. In active form of the above diseases fever, cough, sputum production and shortness of breath dominated the clinical picture and hemoptysis tends to occur later if prompt treatment was not initiated. Similar findings were present in studies done by Joseph T et al, Ghimire H.R et al, Bondade K et al, Pires F.S et al[1,3,6,7]. In some older studies like prasad et al, Korvadiya A. et al. and H.J. Lee et al[11,23,24], active tuberculosis was the most common cause of hemoptysis and one study done USA, New York City Community Acquired Pneumonia was the most common cause of hemoptysis[8].

Lung malignancies primary or metastasis are always an important cause of hemoptysis. In developed countries where tuberculosis and infective respiratory illness are scarce lung malignancies are one of the commonest causes of hemoptysis[1,3]. In our study we had 19 (9.64%) patients of malignancy with hemoptysis. 50% of malignancies was squamous cell carcinoma with cavitation in our study, similar study by H.J.Lee also found squamous cell carcinoma to be the most common cause for hemoptysis among lung malignancies.[24] 11(5.58%) patients in our study had no detectable cause for hemoptysis despite extensive investigations and was labelled as idiopathic. In most studies published in literature about 20 to 30% of hemoptysis have no identifiable cause[3-6]. Idiopathic variety of hemoptysis were mild to moderate type and responded to conservative therapy in our study. We had 7(3.55%) patients of aspergilloma presenting as hemoptysis. 1 patient of

aspergilloma died due to massive hemoptysis in our hospital. 3 patients with aspergilloma had post tubercular cavity and 2 patients had hematological malignancy. Out of 197 patients only 12 patients had severe hemoptysis in our study. Most common etiological group with severe hemoptysis was post infectious bronchiectasis. 5 patients were sent for interventions, 1 died and remaining 6 patients were managed with blood transfusion and conservative treatment in ICU.

CONCLUSION

A single episode of hemoptysis can represent serious underlying respiratory disease. In developing countries like Nepal post tuberculosis and post infectious bronchiectasis are still the major causes of hemoptysis. Most of the hemoptysis in our study were of mild to moderate severity which were treated conservatively. Most of our patients had developed infectious respiratory illness in younger working age group thus presenting with bronchiectasis as sequel of their illness in late middle age.

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