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A Prospective Evaluation of Hemoptysis Cases in a Tertiary Referral Hospital

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Abstract
Background: *Haemoptysis is an alarming symptom, and the management depends upon the aetiology. The etiology of hemoptysis in various studies is based on the geographic location, the patient population studied, the diagnostic tests employed and the time of publication. Although exact percentages vary in large general populations, bronchiectasis, tuberculosis, and bronchogenic carcinoma are the leading causes of hemoptysis*
Methods: *We prospectively evaluated 175 patients with haemoptysis admitted to the department of respiratory medicine pariyaram medical college, kannur, kerala., for 1 year.*
Results: *Among them 160 (91.4%) were males and 15(8.6) were female. The mean age of presentation was 57.31+/13.57. Sputum was positive for AFB in 12% cases. Chest x-ray was abnormal in 94.25% cases. Fibrosis was the most common abnormality (22.28%) followed by consolidation (21.14%)%). Fibreoptic bronchoscopy (FOB) was done in 75 (42.85%) patients CT done in 100 cases. Final diagnosis obtained in 165 cases. Most common cause was found to be due to Pulmonary TB and its sequelae,84 cases(50.9%).*
Conclusion: *Even in patients with history of ATT, hemoptysis doesn't always reflect underlying pulmonary TB or its sequelae. Hence proper diagnostic work up should be under taken in those cases also. Careful assessment of aetiology is essential to provide proper treatment.*
Keywords: *haemoptysis; aetiology; CT scan; bronchoscopy.*

Introduction

The coughing up of blood is termed hemoptysis. The term comes from the Greek Words 'haima' meaning blood, and 'ptysis' meaning spitting. Hemoptysis (expectoration of blood) is an alarming symptom in the patient and physician alike and often indicates serious underlying pathology [(1).] For centuries, hemoptysis was considered pathagnomonic of pulmonary.

Tuberculosis, a view that is summarized in the Hippocratic aphorism "the spitting of pus follows the spitting of blood, consumption follows the spitting of this and death follows consumption"[(2).]

Hemoptysis is an alerting symptom which may result from a wide variety of disorders. The etiology of hemoptysis in various studies is based on the geographic location, the patient population studied, the diagnostic tests employed and the time of publication. Although exact percentages vary in large general populations, bronchiectasis, tuberculosis, and bronchogenic carcinoma are the leading causes of hemoptysis [3,4,5,].

A major problem in haemoptysis is the wide spectrum of etiologies that may result in haemoptysis[6,7,8] and variations in the reported prevalence. The effective management of haemoptysis depends upon identification of the etiology and localization of the site of bleeding.

Diagnostic procedures for the evaluation of patients with hemoptysis consist of mostly chest radiography, computed tomography (CT) of thorax, and fiber optic bronchoscopy (FOB) [8,9,].

So it is evident that the spectrum is continuously changing and more sophisticated investigations, better imaging techniques, bronchoscopic tools, availability of newer techniques in the developing world, and changing pattern of diseases, all contribute to these changes. This may influence the diagnostic utility of each test, preliminary investigations in each cases, and incidence of each etiological diagnosis .There are very few studies available from India analyzing the causes and outcome of hemoptysis in Indian population. The study done in Lucknow[10] shows that tuberculosis is still a major cause in our population but admit the fact that about one- third of the patients with hemoptysis had been misdiagnosed by the referring doctor as having active pulmonary tuberculosis.

In their study, bronchogenic carcinoma was the second most common cause for hemoptysis; some other Indian studies have not reported such a finding, probably because bronchogenic carcinoma could not be diagnosed due to poor diagnostic facilities and the cases were, therefore, included in the 'undiagnosed' category.

The outcome of haemoptysis is generally good, but varies according to the modality of treatment. This study prospectively evaluates the etiology of haemoptysis, the role of roentgenogram, high resolution computerized tomography of the chest (HRCT-chest) and fibre optic bronchoscopy (FOB) in diagnosing the etiology in a tertiary care hospital in north malabar area.

Methodology

All consecutive patients attending the Respiratory Medicine Department, Pariyaram Medical College, Kannur, Kerala with haemoptysis for one year period were enrolled in the study. Patients who do not give consent or not willing for studies were excluded. Informed consent were taken. Demographic details were collected. A detailed history and physical examination were done. Haemoptysis was quantified as mild (<100 mL), moderate (100-400 mL) and massive (>400 mL). Routine investigations (Blood count and ESR, Urine Routine Examination, Random Blood Sugar, Renal Function Test, Liver Function Test, Sputum AFB, Sputum Cytology, Sputum Gram Stain, Sputum Culture and Sensitivity, Chest X-Ray) were done. These patients were subjected to Bronchoscopy, Computed Tomography Scan of lung, Coagulation profile, Autoantibody testing, baseline cardiac investigations and a Tuberculin test based on the clinical context and differential diagnosis.

Statistical analysis: Data were entered and analysed using the Statistical Package for the Social Sciences (SPSS) version 12 software. p value less than 0.05 was considered significant.

Results

A total of 175 patients were enrolled in the study. Among them 160 (91.4%) were males and 15 (8.6) were female. The mean age of presentation was 57.31+/13.57. Most of them were more than 40 years. In majority of cases (73.1%) cough was present. Sputum production was present in 57.1% cases. Dyspnoea was present in 48.6 % and fever was present in 43.4% cases.

Among total number of cases 32.6% gave history of previous ATT. Majority of cases gave a shorter

duration of haemoptysis of either few days 71.4% or few weeks16% .Only 2.3% of cases were having episodes recurring for years. Majority had mild hemoptysis (82.3%). Only 6.3% had severe hemoptysis.11.4% had moderate haemoptysis. Most of the patients were smokers. Majority had smoking index less than 400.18.85% had tachycardia, 26.28 % had high BP, 0.57% had low BP and 48.57% had tachypnoea. Clubbing was present in 48% cases. Pallor was present in 14.3% and lymphadenopathy was present in13.1% cases. Almost 55% had elevated ESR; RBS was elevated in 20.5% cases. LFT were abnormal in around 5% cases. Peripheral smear showed anaemia in 5 % cases. Sputum was positive for AFB in 12% cases and positive for malignant cells in 1.14% cases).Sputum culture was either sterile or normal flora in 69.6% cases; pseudomonas detected in 6.5% cases, acinetobactor in 2.2% cases, klebsiella in17.4% cases and mixed growth in 2.2% cases. E.coli was detected in one case. Chest x-ray was abnormal in 94.25% cases. Fibrosis was the most common abnormality (22.28%) followed by consolidation (21.14%). Fibreoptic bronchos-copy (FOB) was done in 75 (42.85%) patients. Intraluminal growth seen in 33 (44%) cases. Biopsy and brushings taken from 45 cases.

CT done in 100 cases. Most common findings were mass (45%) and bronchiectasis (27%).

FNAC of lung mass done in 10 cases 5 were adenocarcinoma 3 were poorly differentiated carcinoma and 2 inconclusive. FNAC of lymph node done in 5 cases. Two cases were adenocarcinoma and 2 were poorly differentiated and one was squamous cell carcinoma.

Final diagnosis obtained in 165 cases. Most common cause was found to be due to Pulmonary TB and its sequelae,84 cases(50.9%). Second commonest cause was malignancy 54 (33.72%) cases. Most common malignancy was poorly differentiated carcinoma (51.85%).

6 patients died due to massive hemoptysis. 4 cases we could not got a definite diagnosis.

Table-1 Baseline characteristics

	Number	Percentage
Sex		
Male	160	91.4
Female	15	8.6
Age		
<40	16	9.1
40-60	82	46.9
>60	77	44
Symptoms		
Cough	128	73.1
Sputum	100	57.1
Dyspnea	85	48.6
Chestpain	52	29.7
Wheeze	2	1.1
Fever	70	40
Low	55	31.4
Loa	70	40
Co-Morbidity		
Diabetes-Yes	25	14.4
Hypertension-Yes	22	12.5
Cad- Yes	8	4.6
Malignancy-Yes	3	1.7
Valvular Heart Disease-Yes	2	1.1
H/O Att		
Yes	57	32.6
No	118	67.4
Duration of Hemoptysis		
Days	125	71.4
Weeks	28	16
Months	18	10.3
Years	4	2.3
Amount of Hemoptysis		
Mild	144	82.3
Moderate	20	11.4
Massive	11	6.3
Gen.Examination		
Pallor	25	14.3
Clubbing	84	48
Cyanosis	0	0
Lymphadenopathy	23	13.1
Jaundice	0	0
Pedal Oedema	6	3.4

Table 2 Chest Xray Findings

Findings	Number	%
Alveolonodular	37	21.14
Fibrosis	39	22.28
Collapse	6	3.4
Mass	32	18.4
Cavity	9	5.2
Cystic	24	13.8
Hilar Prominence	7	4
Lung Abscess	3	1.7
Effusion/Empyema	5	2.9
Pneumo/Hydropneumothorax	2	1.1
Normal	10	5.7

Table 3 Bronchoscopy Results

Brochoscopy	Frequency	Percentage
Done	75	42.85
Intraluminal Growth	33	44
Extraluminal Compression	5	6.66
Abnormal Mucosa	10	13.33
Secretions	24	32
Normal	3	4

Table 4 Types of Maligncy in Bronchoscopy

Hpr	Frequency	Percentage
Squamous Cell	7	17.5
Adeno	10	25
Poorly Differentiated	23	57.5

Table 5 CT Findings

Finding	Frequency	Percent
Consolidation	7	7
Fibrosis	14	14
Mass	45	45
Cavity	1	1
Bronchiectasis	27	27
Lung Abscess	1	1
Normal	5	5

Table 6 Types of Malignancy

Histopathology	Frequency	Percent
Poorly Differentiated	28	51.85
Squamous Cell	8	14.81
Adenocarcinoma	17	31.48
Small Cell	1	1.85

Table 7 Final Diagnosis

Diagnosis	Frequency	Percent
Malignancy	54	32.72
Old Pt Fibrosis	33	20
Bronchiectasis	31	18.78
Active Pt	20	12.12
Lung Abscess	2	1.21
Pneumonia	20	12.12
Upper Respiratory	5	3.03

Discussion

A total of 175 patients were enrolled in our study. Majority of the patients (91.4%) were males and 8.6% were female. The mean age of presentation was 57.31+/13.57. Most of them were more than 40 years. In majority of cases (73.1%) cough was present. Sputum production was present in 57.1% cases. Dyspnoea was present in 48.6 % and fever was present in 43.4% cases. Of all co morbidities Diabetes was the most common past illness (14.4%) and the second one was Hypertension (12.5%). Almost half of the patients had no significant illness in the past. Majority of cases gave a shorter duration of haemoptysis of either days (71.4%) or few weeks (16%). Only 2.3% of cases were having episodes recurring for years. Majority had mild hemoptysis (82.3%). Only 6.3% had severe hemoptysis.11.4% had moderate haemoptysis. In the study of 143 patients from Turkey, 67.8% had mild haemoptysis 22.4% had moderate haemoptysis and 9.8% had severe haemoptysis [(11)]. In an Indian study from Lucknow done on 476 cases from 1996 to 2002, the incidence of massive hemoptysis was 5.3%.(10) In our study most common etiological diagnosis of mild hemoptysis was old PTB and pneumonia (22.3% each) followed by bronchiectasis (20.2%)active PTB(14.1%) and malignancy(12.1%) .The etiology of both moderate and severe hemoptysis was old PTB in our study .Study at Ataturk chest hospital Ankara Turkey in 143 patients showed malignancy as the most common cause of haemoptysis (22.6%) [(11)]. These observations show that it is not always possible to make etiological diagnosis from the nature of hemoptysis. Most of the patients were smokers (76.57%). Majority (59.57%) had smoking index < 400. 8% were ex smokers stopped smoking 10 years back. 18.85% had tachycardia, 26.28% had high BP, 0.57% had low BP and 48.57% had tachypnoea. Clubbing was present in 48% cases. Pallor was present in 14.3% and lymphadenopathy was present in13.1% cases.

Almost 55% had elevated ESR, RBS was elevated in 20.5% cases. LFT were abnormal in around 5% cases. Peripheral smear showed anaemia in 5 % cases Sputum was postive for AFB in 12% cases and postive for malignant cells in 1.14% cases Sputum culture was either sterile or normal flora in 69.6% cases; pseudomonas detected in 6.5% cases, acinetobactor in 2.2% cases, klebsiella in 17.4% cases and mixed growth in 2.2%cases. E.coli was detected in one case. Chest x-ray was abnormal in 94.25% cases.

Study from New Delhi tuberculosis centre in 1966(776 patients) showed that pulmonary TB is the most common cause [(12).]Next in order was

pneumonia. Study done Lucknow also showed pulmonary TB as the most common cause [11].So our study gave similar result as those were conducted in India previously. But western studies showed different picture with bronchiectasis and malignancy as the important causes than tuberculosis.

Bronchiectasis was leading causes in a study done by Saunders and Smith 28.5%, Mc Guinness et al 25%, Boaz Hirshberg 20% [4,12,9] . Study done in Kuwait in 2001 also suggest same result [13] . South African study in 1990 suggested pulmonary tuberculosis as most common cause73% [14]. Similarly Indian studies as given in above table show pulmonary tuberculosis as most common cause of haemoptysis. Percentage varying from 27% to 79.2% and 65%. Our study also showed tuberculosis and its sequelae as the commonest cause50.9%.. The pattern has not changed since 1960, study done by Rao [15]. Second most common cause being bronchogenic carcinoma ranging from 5.7% to 20% [8] . In our institute it is 32.72%. In a study conducted by Mishra v etal showed Lower respiratory infections bronchitis and pneumonia 30.88% [16]. In our study 12.12 % was due to pneumonia.

The most common histological subtype of malignancy was poorly differentiated carcinoma. Among the differentiated carcinoma, adenocarcinoma was the most common. This is in accordance with recent study regarding histopathological sub type of malignancy.

In 93.71% patients, hemoptysis was managed conservatively.6 patients died and 5 patients were transferred to ENT department. The overall mortality rate (3.4%) in this study was somewhat lower than that reported by Knott-Craig et al[17] (10%) Corey et al[18] (9%) Prasad R, Garg R et al[10] (8.2%) .This difference may be because of the fact that in our study most of the cases were of mild haemoptysis where as in other studies most of them were with massive hemoptysis. Our study could not correlate mortality with severity since these cases were not directly attributable to the bleeding. Moreover, we have not done a follow up study, so the mortality in patients with a diagnosis of malignancy was not assessed. These patients were usually referred to radiotherapy department once symptoms subsided and HPR obtained.

Conclusion

Pulmonary TB and its sequelae were the most common causes of haemoptysis in this study. Pneumonia is also an important etiology for mild haemoptysis. The amount and duration of haemoptysis is not always a good indicator of underlying disease. Although the clinical history and physical examination are important leads towards diagnosis, presumptive or premature diagnosis should be avoided. Even in patients with history of ATT, hemoptysis doesn't always reflect underlying pulmonary TB or its sequelae. Hence proper diagnostic work up should be under taken in those cases also. The most common cause of hemoptysis is benign disease rather than malignant disease. Most of the patients were managed conservatively. Careful assessment of aetiology is essential to provide proper treatment.

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