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HAEMOPTYSIS OF UNKNOWN ORIGIN: THE EXPERIENCE OF RIYADH CENTRAL HOSPTIAL

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Sixty-seven patients admitted with the provisional diagnosis of "Haemoptysis for investigation" were reviewed to ascertain the aetiology and incidence of surgically curable causes of haemoptysis. In a predominantly male sample (51 of 67), haemoptysis occurred at the mean age of 40.5 years. Thirty-eight (56.7%) of sixty-seven patients had bronchial or lung parenchymal inflammation as the cause of haemoptysis. Thirty-nine patients had bronchography to find the cause of haemoptysis. Twenty-one (53.8%) of thirty-nine patients were found to have bronchiectasis as a cause of haemoptysis. No case of lung cancer was detected in this series on sputum cytology, computerized tomography (CT) of chest and bronchoscopy. The yield of interventional investigations to find out a surgically curable cause of haemoptysis is low (2 of 67, 2.9%), when chest radiograph is within normal limits. We conclude that in Saudi Arabia the aetiology of haemoptysis in patients with normal chest X-ray is different from that seen in Western countries. Lower respiratory tract infections remain the predominant cause of haemoptysis. We recommend bronchography or high resolution CT of chest to screen patients with recurrent haemoptysis when the chest radiograph is within normal limits. Bahrain Med Bull 1995;17:

Unexplained and unexpected bleeding from any part of the body is a frightening experience. This is particularly true of haemoptysis because of the age-old stigma attached to it as a harbinger of pulmonary tuberculosis and recently, as a warning symptom of lung cancer. However, whether or not to investigate a patient with first episode of haemoptysis is subject to controversy, more so if the chest radiograph is normal[1-4].

Massive haemoptysis is a medical emergency and is initially managed conservatively. Its cause is not always apparent,

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and up to 50% of patients remain without specific diagnosis[1,5]. Concerned about the incidence of lung cancer in patients with haemoptysis as reported from many countries[5-7], we reviewed our experience with patients admitted with the diagnosis of "haemoptysis for investigation". The aim of this review is to highlight the different aetiology of haemoptysis in Saudi Arabia compared to North America and Western Europe.

METHODS

All the case records of patients admitted from January 1986 to May 1990, to the Thoracic Surgery Division of Riyadh Central Hospital, Riyadh, Saudi Arabia, with the provisional diagnosis of "haemoptysis for investigation" were reviewed retrospectively. Patients with obvious chest X-ray abnormalities resulting in haemoptysis were excluded. Information gathered included age, sex, duration, amount of haemoptysis and coagulation profile. Initial management included bed rest, sedation, antibiotics and blood transfusion if indicated. Sputum was routinely screened for malignant cells and pyogenic micro-organisms, acid fast bacilli and fungal elements.

All patients had bronchoscopy within 48 hours of haemoptysis. Any evidence of mucosal congestion, inflammation, presence of clots, bleeding points or purulent secretion was considered as an abnormal finding. Bronchial secretions were sent for cytology and pyogenic, tuberculous and fungal cultures. Any suspicious bronchial mucosa was biopsied.

Computerised tomography (CT) of the chest was done for patients with normal chest skiagram. Additionally, unilateral or bilateral bronchograms were available for 39 patients.

Results of sputum analysis, tuberculin test, chest radiographs, CT of chest, bronchograms and bronchoscopy were taken into consideration to arrive at the final diagnosis.

RESULTS

Of the 67 patients identified, there were 51 (76%) men and 16 (24%) women. There were 41 (61.2%) patients below the age of 40 years old (mean 40.5 years old); range 15 to 90 years old. Various patient characteristics are shown in Table 1.

Table 1
Patient Characteristics

	No	%	
Number of Patients		67	
Males	51	76.0	
Females		16	24.0
Age			
Up to 40 years		41	61.2
More than 40 years		26	38.8
Duration of Haemoptysis			
1-14 days		35	52.2
15-30 days	8	12.0	
30+ days		24	35.8
Severity of Haemoptysis			
Mild (<10 ml/day)	37	55.2	
Moderate (10-100 ml/day)		17	25.4
Massive (>100 ml/day)	13	19.4	

The cause of haemoptysis, identified after thorough review of sputum analysis, chest radiographs, CT of chest, broncho-grams and bronchoscopic findings, are shown in Table 2.

Table 2
Cause of Haemoptysis

Cause	No	%	
Bronchial/Parenchymal inflammation	35	52.3*	
Bronchiectasis	21		53.8**
Tuberculosis	6		8.9
Pulmonary vascular abnormality			
Bronchial & Pharyngeal telangiectasia	1	1.5	
Silent pulmonary infarction	1	1.5	
Coagulation abnormality	1	1.5	
Upper respiratory tract abnormalities	2	3.0	

* Bronchoscopic diagnosis
** Only 39 patients had Bronchography

Two patients with haemoptysis originating in upper respiratory tract are included in the study as they posed a considerable diagnostic problem before actual site of bleeding was discovered in the nasopharynx. Each had bronchoscopy performed twice with finding of blood clots in right bronchial tree without any evidence of bronchial inflammation.

Tuberculin test, done in 51 of 67 patients, was positive in 32 (62.7%). Six patients were considered to have pulmonary tuberculosis (four inactive and two active) based on previous history, chest radiograph and positive tuberculin test. None had positive sputum for acid fast bacilli.

Sputum of bronchial lavage grew pyogenic organisms in 8 out of 45 patients (17.8%), Haemophilus influenzae in 6, Staphylococcus aureus in one and Pseudomonas aeruginosa in one each. Sputum and bronchial lavage cytology was negative for malignant cells in all patients.

Chest radiograph was normal in 58 of 67 (86.6%) patients. Nine (13.4%) patients had abnormal chest radiograph showing inflammatory infiltrates in 4, healed pulmonary tuberculosis in 4 and right middle lobe capacity in one.

Bronchoscopy was normal in 26 (38.8%) patients. Bronchial mucosa was hyperemic and inflamed in 38 (56.7%). One patient had pharyngeal and bronchial telangiectasia and two patients had blood in the right bronchial tree, the source of which was traced to the nasopharynx. This serves as a reminder that not all haemoptysis arises from the lungs. The site of the bleeding was localized in 25 (37.3%) patients.

Of the 67 patients, 39 (58.2%) had either bilateral (23 of 39) or unilateral bronchography. Of the 39 patients, 21 (53.8%) had abnormal bronchogram. Two of these required surgical resection. The others had early cylindrical bronchiectasis. This group accounted for 7 of 13 heavy bleeders. One patient with uncontrolled haemoptysis underwent emergency right pneumonectomy. The resected specimen showed active tuberculous lesions in most of the lung field. The patient with right middle lobe opacity was confirmed to have a mass on CT scan of chest and had right middle lobectomy. It turned out to be infarction on histopathology.

DISCUSSION

Nonspecific inflammatory lung diseases associated with congestion remain the major cause of haemoptysis in this series[8,9]. Moreover, we also noticed that our

patients do present with haemoptysis more in winter months and do respond to antibiotic therapy though statistical evidence may be lacking[10,11]. A favourable outcome of medical management in most of our patients, including those with multiple admissions and recurrent haemoptysis, is due to our policy of instituting antibiotic therapy at the very outset.

No patient was found to have lung cancer in this series. This contrasts with series from Western countries where the incidence of lung cancer in patients with haemoptysis and normal chest skiagram varied from 2.7% to 22%[7,12,13]. The reason for the nil incidence of cancer in this series may be due to the young age group of patients in this study. Haemoptysis is a symptom of already advanced lung cancer and is usually associated with X-ray abnormalities[6,8].

Bronchography was employed as an additional investigation and we found bronchiectasis as a cause of haemoptysis in 53.8% (21 of 39) of the patients. In Western countries, the incidence of bronchiectasis varies from 2.2% to 17%[14-16]. This difference is most likely a reflection of the generally more prevalent childhood respiratory infections in developing countries. Based on bronchography, two patients were considered for surgical resection. The remaining patients had either unilateral, early cylindrical changes (14 patients) or scattered, bilateral cylindrical bronchiectasis (5 patients) where surgery was not indicated. Haemoptysis is not a common presenting symptom in a localized, lobar cystic bronchiectasis. Haemoptysis in bronchiectasis occurs late because it depends upon the development of enlarged bronchopulmonary vascular communications[17]. Superadded infections may have resulted in haemoptysis even with early changes of bronchiectasis in this series. This indicates the importance of treating infections vigorously.

Tuberculosis constituted a small group of 8.9% (6 of 67) of the patients in this series as compared to 89% reported by Bobrowitz[16] and 52% reported by Conlan18. In both series, positive tuberculin test was considered sufficient proof of tuberculosis. This criteria is not applied in this study to diagnose tuberculosis since the incidence of positive tuberculin test in the general population varies from 40% to 70%[19,20]. In the Saudi Arabian population, the incidence of positive tuberculin test is 48.5%[21].

Bronchoscopy diagnosed inflammation in 38 (56.7%) of 67 patients and the site of bleeding in 25 (37.3%) of 67 patients. The low incidence (10% and 25% respectively) of localisation of the bleeding site by other investigators may be due to late bronchoscopy performed after haemoptysis4'[5]. It is important that patients with recurrent massive haemoptysis should undergo bronchoscopy at the first available opportunity to identify the site and side of bleeding. This greatly helps the surgeon in deciding the appropriate surgery without loss of time should circumstances demand. Whether all patients with haemoptysis need bronchoscopy, it remains to be controversial[1-3]. Weaver1 identified age above 40 years, abnormal chest radiograph and duration of haemoptysis more than one week as significant risk factors and recommended bronchoscopy if any of these risk factors is present. We recognize the need to do one bronchoscopy in patients above 40 years of age and with abnormal chest radiograph. But, because of the different spectrum of the diseases, the duration of haemoptysis of more than one week may not be a significant risk factor in developing countries, particularly when chest radiograph is normal. Santiago et al[3] also did not find the duration of haemoptysis of more than one week helpful in identifying patients with lung cancer. Long term prognosis remains favourable in this setting5 and the majority of patients with idiopathic haemoptysis follow a benign course[7].

CONCLUSION

Haemoptysis is more often due to benign medical as opposed to surgical causes when chest radiographs show within normal changes. The aetiology of haemoptysis

of `unknown origin' seen in our group of patients differs markedly from that encountered in Western countries where lung cancer constitutes a significant percentage. In this series, lower respiratory tract infections remain the major cause of haemoptysis. Lung cancer is not a leading cause.

Haemoptysis often occurs within a young age group. Most of these patients, except those with recurrent massive haemoptysis, may be safely observed and managed in peripheral hospitals.

The incidence of finding a surgically curable cause of haemoptysis is low after interventional investigations. Upper respiratory tract should be carefully screened when lower respiratory tract is normal. Patients with recurrent haemoptysis should have bronchoscopy and bronchography to diagnose early cylindrical bronchiectasis where chest radiograph is deceptively normal. If available, a high resolution CT may be undertaken as a primary non-invasive investigation of patients with recurrent haemoptysis and normal chest skiagram.

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