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RESEARCH ARTICLE

Etiology and outcome of hemoptysis in Qatar, a high-resource country with a large expatriate population: A retrospective study

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ABSTRACT

Background: Hemoptysis is an alarming symptom in clinical practice. We reviewed ten years of experience with hemoptysis in a tertiary hospital in Qatar to identify hemoptysis etiologies, patient characteristics, and associated factors.

Methods: Hemoptysis was defined based on severity as mild (< 50 ml or streaks of blood), moderate (50 – 150 ml) and massive (> 150 ml) in the 24 hours before admission. Hemodynamically unstable is considered when systolic BP < 100 mmHg, tachycardia with HR > 110/min, tachypnea with RR > 22/min, or SpO2 < 92% on room air.

Results: A total of 102 patients (41 females and 61 males) with 133 episodes of hemoptysis were identified in this study. Among the hemoptysis patients with co-morbidities, 19 patients had hypertension, 17 patients had cardiovascular disease, and 66 patients with other co-morbidities. COPD patients had a significant ($p < 0.02$) association with hemoptysis. Chest X-ray was used in most patients and other modalities like CT scan and bronchoscopies were used less frequently. Pneumonia (12.8%), bronchiectasis (11.8%) and cardiovascular disorders (11.8%) are the primary causes of hemoptysis. Malignancy was less frequent (7.8%), and broncho-genic carcinoma was uncommon (2%). There were 24 (23.5 %) no identified causes of hemoptysis. The overall mortality was 9.8% in this study.

Conclusions: Population demographics played a significant role in the severity of hemoptysis and prognosis. Most patients had benign etiologies, lower severity of hemoptysis and good prognosis. Differences in the etiology, initial severity, and prognosis of patients with hemoptysis were found significantly

different when compared with those reported in previous studies.

Keywords: hemoptysis, causes, outcome, Qatar population demographics

INTRODUCTION

Hemoptysis is a distressing symptom that generally prompts emergency visits. It is defined as the expectoration of fresh blood, and it can be a symptom of a life-threatening pulmonary condition.[1] The severity of hemoptysis has different definitions in the medical literature. The majority of published articles classify hemoptysis severity into mild, moderate, and severe or massive on the basis of the amount of blood expectorated per episode or over 24 hours.[2,3] A more relevant clinical definition is based on the presence of a life-threatening condition similar to any hemoptysis that results in blood expectoration of >100 mL within 24 hours and causes abnormal gas exchange/airway obstruction or hemodynamic instability.[3] The standard diagnostic evaluations include plain chest radiograph (CXR), chest computed tomography, and fiberoptic bronchoscopy (FOB).[4,5]

It is important to identify the underlying etiology of hemoptysis to recognize patients with severe underlying disorders. It is also important to evaluate the methods used for diagnosis and management of hemoptysis to avoid any delay in patient care.[6,7] The causes of hemoptysis remain undetermined in 3% – 22% of patients.[8,9] The most common pulmonary causes of hemoptysis are bronchitis, pneumonia, tuberculosis (TB), bronchogenic carcinoma, and bronchiectasis.[10,11], whereas other nonpulmonary causes are congestive heart failure, medications, and blood disorders.[9]

It is important to understand that the causes of hemoptysis vary according to geographical areas and population.[12] In Qatar, it has been estimated that 80% of the inhabitants are from the Middle East and Asia.[13] Currently, to the best of our knowledge, there is no published data on the causes or associated factors of hemoptysis in Qatar. Therefore, this study aimed to review the findings of 10 years of experience with hemoptysis at the only tertiary hospital in Qatar and identify different etiologies, patient characteristics, and factors underlying these findings. This study also aimed to correlate the relationship among the severity, causes, investigation modalities, and outcomes of hemoptysis.

MATERIALS AND METHODS

All patients admitted to Hamad Medical Corporation, Doha, Qatar, with a discharge diagnosis of hemoptysis from January 1997 to December 2007 were retrospectively included and analyzed. The study was approved by The Institutional Review Board (**IRB**) at Hamad Medical Corporation. Hemoptysis was defined according to the amount of blood expectorated within 24 hours before admission as follows: mild, <50 mL or streaks of blood; moderate, 50 – 150 mL; and massive, >150 mL. Patients with a systolic BP of <100 mmHg, tachycardia with a heart rate of >110 beats per minute, tachypnea with respiratory rate of >22 breaths per minute, or SpO_2 level of $<92\%$ in room air were defined as hemodynamically unstable. Chest X-ray was performed in 98 (96.1%) patients, chest CT scan in 45 (44.1%), FOB in 33 (32.4%), and sputum smear for acid-fast bacilli (AFB) in 82 (80.4%). The seasons in Qatar have little variability throughout the year because of the desert atmosphere of the peninsula. We categorized the seasons according to the weather into cold (when the temperature is <25°C most days from October to March) and warm (when the temperature is 26°C – 44°C most days from April to September).[14]

The chi-square test and estimate calculations of the Statistical Package for Social Sciences program (version 22; IBM Corp., Armonk, NY, USA) were used for data analysis. In addition, multivariable logistic regression analysis was performed. A P value of <0.05 (two-tailed) was considered statistically significant.

RESULTS

The number of episodes of hemoptysis was 150 in 121 patients during the study period. A total of 19 patients were excluded from the study due to missing information, and finally, 102 patients with 133 episodes of hemoptysis were analyzed. Among the 102 patients, 59 (57.8%) had mild hemoptysis (mild hemoptysis group), 16 (15.7%) had moderate hemoptysis (moderate hemoptysis group), and 27 (26.5%) had massive hemoptysis (massive hemoptysis group).

Demographic Variables

The study population comprised 41 (40.2%) females and 61 (59.8%) males ($P = 0.654$). A total of 32 (31.4%) patients were Qataris ($P = 0.204$) and 34 (33.3%) were smokers ($P = 0.332$). The mean age of the patients was 41.88 ± 20.1, 37.6 ± 21.1, and

Table 1. Demographics of patients with hemoptysis.

Demographic variables	Hemoptysis categories				P value
	Mild	Moderate	Massive	Total	
Age range, years (Mean ± SD)	2 – 86 (41.9 ± 20.2)	11 – 88 (37.6 ± 21.1)	20 – 78 (46.2 ± 16.07)	2 – 88 (42.3 ± 19.3)	0.3
Sex No. (%) Female	22 (37.3)	8 (50)	11 (40.7)	41 (40.2)	0.654
Nationality No. (%) Qatari	21 (35.6)	2 (12.5)	9 (28.1)	32 (33.34)	0.204
Smoking No. (%) Yes	20 (33.9)	3 (18.8)	11 (40.7)	34 (33.3)	0.332
Season at the time of admission No. (%)					
October – March	29 (49.2)	9 (56.3)	14 (51.9)	52 (51)	0.876
April – September	30 (50.8)	7 (43.8)	13 (48.1)	50 (49)	
Hemoglobin (g/dl) (Mean ± SD)	12.9 ± 2.5	15.01 ± 8.8	12.1 ± 3.07	13.06 ± 4.3	0.106
Hematocrit (%) (Mean ± SD)	38.2 ± 7.5	39.02 ± 4.1	36.1 ± 8.5	37.8 ± 7.3	0.504
Total	59 (57.8%)	16 (15.7%)	27 (26.5%)	102	

46.2 ± 16.07 years in the mild, moderate, and massive hemoptysis groups, respectively (P = 0.3). In this study, 4 patients were aged <14 years: 3 in the mild hemoptysis group and 1 in the moderate hemoptysis group. Seasonal variation had no effect on the incidence of hemoptysis (Table 1).

Hemoptysis and Comorbidities

Comorbid conditions were common in this study cohort, wherein 14 (13.7%) patients had diabetes mellitus, 19 (18.6%) had hypertension, and 17 (16.7%) had cardiovascular diseases. A history of TB was reported in 13 (12.7%) patients, and 6 of them had massive hemoptysis. Cystic fibrosis was not reported in this study cohort. A significant relationship was found between hemoptysis severity and the presence of chronic obstructive pulmonary disease (COPD) (P < 0.02), whereas the relationship between hemoptysis severity and the presence of other diseases as well as with the use of anticoagulants or antiplatelets was not significant (Table 2).

Clinical Parameters

A purified protein derivative (PPD) skin test was performed in 70 (68.3%) patients, of whom 25 (35.7%) showed positive results. A sputum AFB test was performed in 82 (80.4%) patients, of whom 1 patient had a confirmed diagnosis of active TB on the basis of a positive result (P = 0.120) (Table 3).

Chest radiography (CXR) revealed abnormal findings in 56 (57.1%) patients (P ≤ 0.05). The site of bleeding could be localized by CXR in 7 patients. Among patients who underwent a CT scan, the bleeding site was identified and localized in 26 (57.8%) (P = 0.011): 8 with bronchiectasis, 4 with pneumonia, 4 with masses, 3 with active bleeding, 3 with TB, 1 with pulmonary edema, 1 with upper airway bleeding, 1 with arteriovenous malformation, and 1 with trauma. Among the 45 patients who underwent a CT scan, 18 (40%) initially showed normal CXR findings. Among those who underwent FOB, 11 (33.3 %) had normal CXR and 9 (27.3%) had normal CXR and CT scan findings. Overall, 6 of the 9 patients with normal CXR and CT scan findings had mild hemoptysis, whereas the remaining 3 had moderate hemoptysis. Among all the bronchoscopies, the bleeding site was identified in 16 (48.5%) patients (P = 0.708).

Causes of Hemoptysis

The causes of hemoptysis were pneumonia [n = 13 (12.8%) patients], bronchiectasis [n = 12 (11.8%)

Table 2. Comorbidities and hemoptysis.

Comorbidities	Hemoptysis total No. (%)
Diabetes mellitus	14 (13.7)
Hypertension	19 (18.6)
Chronic obstructive pulmonary disease	5 (4.9)
Connective tissue disorder	2 (2)
Asthma	4 (3.9)
Pulmonary hypertension	2 (2)
Immunosuppression	1 (1)
Kidney disease	2 (2)
Cardiovascular disease	17 (16.7)
Congenital heart disease	3 (2.9)
Anticoagulant	7 (6.9)
ASA/Antiplatelet	7 (6.9)

patients], cardiovascular disorders [n = 12 (11.8%) patients], and bronchitis [n = 9 (8.8%) patients]. Malignancy was diagnosed in 8 (7.8%) patients, of whom metastatic carcinoma was found in 4 (3.9%) patients and bronchogenic carcinoma in 2 (2%). Pulmonary TB was the cause of hemoptysis in 5 (4.9%) patients, of whom 2 had severe, 1 had moderate, and 2 had mild hemoptysis. Cystic fibrosis (CF) was not reported in any patient. Moreover, in 23 (22.5%) patients, no cause was identified (Table 4).

Outcome of the Patients with Hemoptysis

The majority of the patients [n = 91 (89.2%)] had only one episode of hemoptysis, whereas 11 patients had more than one episode of hemoptysis, 5 (8.5%) had mild episodes, 1 (6.2%) had a moderate episode, and 5 (18.5%) had massive episodes. The causes of recurrent hemoptysis in these patients with the mild episodes were bronchitis in 2, bronchiectasis in 2, and pulmonary edema in 1 patient. In the patients with severe episodes, the causes were sepsis, Behcet's disease with pulmonary artery fistula, cavity with aspergilloma, tuberculosis, and pulmonary edema, whereas no cause was identified in the patient with a moderate episode.

Hemodynamic stability in association with hemoptysis severity (mild, moderate, and severe) was analyzed in 99 patients, of whom 88 (88.9%) were hemodynamically stable. Among the hemodynamically unstable patients, bleeding was mild in 3 (5.4%), moderate in 2 (12.5%), and massive in 6 (22.2%) patients. Among the hemodynamically

Table 3. Investigations with high yield in hemoptysis.

		Hemoptysis category				
Investigation		Mild No. (%)	Moderate No. (%)	Massive No. (%)	Total No. (%)	P value
PPD	Performed	41 (69.5)	13 (81.3)	16 (59.3)	70 (68.6)	0.346
PPD result	Positive	11 (26.8)	6 (46.2)	8 (50)	25 (35.7)	0.313
Sputum AFB	Performed	47 (79.7)	15 (93.8)	20 (74.1)	82 (80.4)	
Sputum AFB	Positive	0 (0)	1 (6.7)	0 (0)	1 (1.2)	0.120
Chest X-ray	Performed	58 (98.3)	15 (93.8)	25 (92.6)	98 (96.1)	
Chest X-ray	Abnormal	28 (48.3)	8 (53.3)	20 (80)	56 (57.1)	0.05
CT scan	Performed	22 (37.3)	9 (56.2)	14 (51.9)	45 (44.1)	0.256
CT scan result	Abnormal	9 (40.9)	5 (55.6)	12 (85.7)	26 (57.8)	0.011
Bronchoscopy	Performed	19 (32.2)	6 (37.5)	8 (29.6)	33 (32.4)	0.867
Bronchoscopy result	Abnormal	10 (52.6)	2 (33.3)	4 (50)	16 (48.5)	0.708

Table 4. Causes of hemoptysis.

Causes of hemoptysis	Hemoptysis category			
	Mild No. (%)	Moderate No. (%)	Massive No. (%)	Total No. (%)
Idiopathic	17 (28.9)	5 (31.3)	2 (7.4)	24 (23.5)
Pneumonia	6 (10.2)	1 (6.3)	6 (22.2)	13 (12.8)
Bronchiectasis	5 (8.5)	6 (37.5)	1 (3.7)	12 (11.8)
Cardiovascular disorders	5 (8.5)	1 (6.3)	5 (18.5)	12 (11.8)
Pulmonary edema	5 (8.5)		2 (7.4)	7 (6.9)
AV malformation			2 (7.4)	2 (2)
Congenital HD		1 (6.3)		1 (1)
Pulmonary embolism			1 (3.7)	1 (1)
Bronchitis	9 (15.26)			9 (8.8)
Malignancy	3 (5.1)	1 (6.3)	4 (14.8)	8 (7.8)
Metastasis	1 (1.7)		3 (11.13)	4 (3.9)
Bronchogenic carcinoma		1 (6.3)	1 (3.7)	2 (2)
Hematological	2 (3.4)			2 (2)
Warfarin overdose	3 (5.1)		3 (11.1)	6 (5.9)
Upper airways	4 (6.8)	1 (6.3)		5 (4.9)
Pulmonary TB	2 (3.4)	1 (6.3)	2 (7.4)	5 (4.9)
Trauma	2 (3.4)		1 (3.7)	3 (2.9)
Sepsis			2 (7.4)	2 (2)
Others				
Foreign body	1 (1.7)			1 (1)
Hemangioma	1 (1.7)			1 (1)
Adenoma	1 (1.7)			1 (1)
Aspergilloma			1 (3.7)	1 (1)

unstable patients, 3 died, of whom 1 had mild hemoptysis.

The majority of patients [n = 92 (90.2%)] recovered and were discharged home; however, 10 (9.8%) patients died either during their early course of admission or within 1 – 2 months. Among the patients who died, 3 (5.1%) had mild, 1 (6.3%) had moderate, and 6 (22.2%) had massive hemoptysis (Table 5). Hemoptysis was the direct cause of death in 4 patients. One patient had Behcet's disease and aortopulmonary fistula and died on day 9 of admission; he had received no surgical intervention for the complicated course and poor prognosis. The other direct causes of death were severe lobar pneumonia with massive bleeding (same day of admission), metastatic choriocarcinoma (same day of admission), and acute myeloid leukemia-M4 (within 2 months of admission due to recurrent bleeding).

In 91 (89.2%) patients, the prognosis was excellent and the management was based on the severity and underlying causes of hemoptysis. Conservative management was provided to 80 (78.4%) patients, and 8 (7.8%) patients needed ICU admission with intubation. Surgical interventions were required in 2 (2%) patients: the first required it due to metastatic uterine cancer (this patient died during hysterectomy) and the second had complex congenital heart disease and received the Fontan procedure. None of the patients in this study received endobronchial tamponade or bronchial artery embolization because this modality was not available in Qatar during the study period.

The result of the logistic regression analysis for each predictor and their possible relationship with hemoptysis severity are presented in Table 6 as odds ratio (OR) and associated 95% confidence intervals (CIs). Female sex (OR 1.33; 95% CI 0.60- 2.96; P = 0.483), cold weather season at the time of admission (OR 1.19; 95% CI 0.54- 2.61; P = 0.665), hemodynamic instability (OR 4.04; 95% CI 1.0-16.28; P = 0.050), history of DM (OR 0.50; 95% CI 0.15- 1.73; P = 0.274), history of hypertension

Table 5. Outcome in patients with hemoptysis.

Outcome	Mild	Moderate	Massive	Total
Prognosis				
Hemoptysis episodes, No. (%)				
1	54 (91.5)	15 (93.8)	22 (81.5)	91 (89.2)
2 or more	5 (8.5)	1 (6.2)	5 (18.5)	11(10.8)
Hemodynamic instability, No. (%)	3 (5.4)	2 (12.5)	6 (22.2)	11 (11.1%)
Length of hospital stay (days) (Mean ± SD)	7.81 ± 5.7	11.31 ± 8.56	9.69 ± 3.7	8.85 ± 5.77
Patients recovered and discharged, No. (%)	56 (84.7)	15 (93.8)	21 (77.8)	92 (90.2)
Patients died, No. (%)	3 (5.1)	1 (6.3)	6 (22.2)	10 (9.8)
Follow-up				
Recovered but lost to follow-up, No. (%)	21 (35.6)	6 (37.5)	2 (7.4)	29 (28.4)
F/U 1 – 6 months, No. (%)	6 (10.2)	4 (25)	5 (18.5)	15 (14.7)
6 – 12 months, No. (%)	4 (6.8)	1 (6.3)	1 (3.7)	6 (5.9)
> 12 months, No. (%)	25 (42.4)	4 (25)	13 (48.1)	42 (41.2)
Died within 1 year after discharge, No. (%)	1 (1.7)	0 (0)	0 (0)	1 (0.98)
Management				
Conservative, No. (%)	52 (88.1)	14 (87.5)	14 (51.9)	80 (78.4)
ICU intubation, No. (%)	2 (3.4)	0 (0)	6 (22.2)	8 (7.8)
RBC transfusion, No. (%)	1 (1.7)	1 (6.2)	1 (3.7)	3 (2.9)
FFP, No. (%)	2 (3.4)	0 (0)	1 (3.7)	3 (3.9)
Surgical intervention, No. (%)	-	1 (6.2)	1 (3.7)	2 (2)

Table 6. Potential predictors and risk factors associated with hemoptysis severity.

	Odds ratio (OR)	95% CI for OR	P value
Age (years)	1.003	0.98, 1.02	0.795
Sex			
Male	1.0 (reference)		
Female	1.33	0.60, 2.96	0.483
Smoking history			
No	1.0 (reference)		
Yes	0.94	0.41, 2.17	0.887
Season at the time of admission			
Warm weather	1.0 (reference)		
Cold weather	1.19	0.54, 2.61	0.665
Hemodynamic category			
Stable	1.0 (reference)		
Unstable	4.04	1.0, 16.28	0.050
Diabetes mellitus			
No	1.0 (reference)		
Yes	0.50	0.15, 1.73	0.274
Hypertension			
No	1.0 (reference)		
Yes	1.30	0.48, 3.53	0.611
Cardiovascular disease			
No	1.0 (reference)		
Yes	1.69	0.59, 4.81	0.327

(OR 1.3; 95% CI 0.48- 3.53; P = 0.611), and history of CVD (OR 1.69; 95% CI 0.59- 4.81; P = 0.327) were positively correlated with an increased risk of hemoptysis severity. Although not statistically significant, both DM and smoking were inversely correlated with hemoptysis severity (P > 0.05). In the multivariable logistic regression analysis after adjusting for all other potential predictors and confounders as mentioned above in Table 6, hemodynamic instability (adjusted OR 4.03; 95% CI 1.0, 16.27; P = 0.050) remained positively and significantly correlated with an increased risk for hemoptysis severity.

DISCUSSION

This study demonstrates the importance of geographic distribution and population demographics of relatively young individuals, primarily expatriates who underwent initial lung screening when coming to Qatar.[13] These factors plays a significant role in having a role in the low incidence rate of hemoptysis in Qatar. To the best of our knowledge, the logistic correlation between the low incidence rate of hemoptysis and population demographics has never been evaluated in Qatar. This information is important for health care providers, policymakers, and administrators of other countries with population demographics similar to those of Qatar. Furthermore, population demographics of relatively young positively correlate with the lower rate of malignancy and tuberculosis in this study.

This study also explored the primary causes and evaluated the outcome of hemoptysis in Qatar. The majority of previous studies have reported moderate and massive hemoptysis to be prevalent.[15,16] Contrary to those studies, massive hemoptysis was relatively uncommon in our study. Moreover, the underlying etiologic diagnosis could not be achieved in 23 (22.5%) patients with hemoptysis, which is similar to that reported in another study conducted in the Middle East but slightly higher than that reported in studies conducted in other countries.[8,9,17] The probable reason for this observation is the infrequent use of bronchoscopy [69 (67.6%) patients] and chest CT scan [57 (55.9) patients] in a significant number of patients. The other possible reason is the high number of patients with a single episode of self-resolving mild hemoptysis, possibly leading to reluctance by physicians and patients to pursue more aggressive invasive diagnostic approaches. Another possible reason to not pursue an aggressive diagnostic approach is the relatively young patient population with a low rate of malignancy.

The majority of studies have demonstrated that lung cancer is one of the most common causes of hemoptysis, followed by bronchiectasis and bronchitis.[2] In contrast, our study demonstrated that bronchogenic carcinoma was relatively less common (2% of the patients), a reflection of the population demographics of relatively young individuals.[18] As a consequence, the mortality rates were relatively less. Massive hemoptysis is a common complication reported in patients with CF.[19] CF has been previously reported in Qataris;[20] however, it was not reported in the present study.

Despite the high number of expatriates from TB-endemic countries (South Asians) and positive results of PPD skin test in 25 (35.7%) patients, TB was detected in only 5 patients and TB sputum in only 1 patient. TB is surprisingly an uncommon etiology of hemoptysis in Qatar probably due to the detection and treatment program with a universal screening of all newcomers by CXR that is in place in Qatar.[21]

The prevalence of hemoptysis is reportedly higher in non-Qataris than in Qataris due to the disproportionally large expatriate population.[22] The difference in the season at the time of admission had no significant changes in the incidence of hemoptysis. Smoking is one of the primary causes leading to hemoptysis.[23] However, most patients in our study were nonsmokers. Hemodynamic instability was found in 11 (11.1%) patients, of whom 3 (5.4%) had mild and 2 (12.5%) had moderate hemoptysis on the basis of our definition according to the amount of blood expectorated. In addition, the multivariable logistic regression analysis after adjusting for all other potential predictors and confounders revealed that hemodynamic instability was the only significant predictor of severity (adjusted OR 4.03; 95% CI 1.0, 16.27; P = 0.050), indicating the importance of incorporating hemodynamic stability in the definition for hemoptysis.[3]

A significant number of patients had comorbidities: 19 (18.6%) with hypertension, 17 (16.7%) with cardiac diseases, and 14 (13.7%) with diabetes. COPD had a significant relationship with hemoptysis (P < 0.02) as a comorbid condition, although it was reported in only 5 (4.9%) patients, which may be related to the low smoking rate in Qatar.[24]

The use of CT versus bronchoscopy for further patient evaluation is controversial in the literature. This leads to a lack of a consistent clinical approach for evaluating patients with hemoptysis.[25,26] The majority of the etiological diagnoses were established on the basis of chest radiography performed in 98 (96.1%) patients with 56 (57.1%) positive results, whereas other tests were used less frequently: chest CT scan was performed in 45 (44.1%) patients with 19 (42.2%) positive results and bronchoscopy was performed in 33 patients with 16 (48.5%) positive results. Diagnosis was achieved in 79 (77.5%) patients.

Among the 73 patients with follow-up records, 42 had 12, 6 had 6 – 11, and 22 had < 6 months of follow-up data available; 29 had missing follow-up records; and 22 had no follow-up records after 6 months, which can be explained by the significant number of expatriates who frequently leave the country after the completion of their short-term contracts. Therefore, it is difficult to conduct cohort studies that require follow-up data in countries with demographics similar to those of Qatar.

Our study has the inherent limitation of a retrospective cohort research, and therefore, our results should be cautiously interpreted. There were significant missing data for 19 patients who were excluded from the study. These patients may represent different etiologies or more severe types of hemoptysis. However, despite this exclusion, our cohort has a good sample size compared with that of previous hemoptysis studies[1-12]. Multiple biases were considered during data analysis, such as selection and misclassification, and other biases, such as the use of medical records data, physician-based diagnoses, and characterization of severity of hemoptysis, were also a limitation.

CONCLUSION

This study showed significant differences in the etiology, initial severity, and prognosis of patients with hemoptysis compared with those reported in previous studies. Most patients in this study had relatively benign etiologies, low severity of hemoptysis, and good prognosis. The primary reason for these findings appears to be the population demographics of Qatar, which primarily comprises a large young expatriate population. This study emphasizes the importance of considering population demographics and other local factors when evaluating patients with hemoptysis.

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