

Research Article

Role of fiberoptic bronchoscopy in cases of hemoptysis with normal chest radiograph

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Received: 28 January 2016

Accepted: 15 February 2016

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ABSTRACT

Background: Hemoptysis is one of the important and common respiratory symptoms in routine clinical practice. The aim is to study the role of fiberoptic bronchoscopy in cases of hemoptysis with normal chest radiograph.

Methods: As per inclusion criteria 18 patients were selected and all of them underwent fibre-optic-bronchoscopy at our Bronchoscopy suite. Routine bronchial washings were obtained and processed with appropriate stains for malignant cells and mycobacterium tuberculosis. Bronchial biopsies and brushings were performed as indicated.

Results: A Total of 18 patients were included in this study after considering the inclusion and exclusion criteria. Of the 18 patients 14 (77.77%) were males and 4 (22.22%) were females. Among 18 patients evaluated for hemoptysis, site of bleeding could be identified in 7 (38.89%) patients but the exact cause of bleeding could not be identified. Bronchial wash was done in 16 of 18 patients and only one of them (6.25%) was positive for malignant cells, which was later confirmed to be carcinoid.

Conclusions: Apart from identifying the site of bleeding in few cases, Fibre-Optic-Bronchoscopy in patients with hemoptysis and normal chest x-ray has limited role in our study and CT examination of all such patients prior to bronchoscopy maybe of some help in making the diagnosis, however the small sample size in present study is a limitation which prevents us from generalising the findings.

Keywords: Hemoptysis, Bronchoscopy, Radiograph, Hypoxia

INTRODUCTION

Hemoptysis is one of the important and common respiratory symptoms in routine clinical practice.¹ Patients presenting with hemoptysis do have underlying lung pathology such as Tuberculosis and Bronchogenic carcinoma.²

But, on average 10-30% of cases with hemoptysis remain undiagnosed.³ Investigating case of hemoptysis is often difficult, especially in patients presenting with a normal chest X-ray, which amounts to 20-30% of total hemoptysis cases.⁴ The diagnostic indications of flexible

bronchoscopy are varied, the spectrum ranging from evaluation of cough, abnormal chest roentgenogram, haemoptysis, refractory lung abscess, diaphragmatic and/or vocal cord palsy, thoracic trauma to suspected pulmonary infections, congenital anomalies, pulmonary malignancies, foreign bodies in the tracheobronchial tree, assessment of endotracheal tube placement and related injuries and research.⁵

However in case of hemoptysis with normal chest radiograph role fibre optic bronchoscopy has been questionable, since various studies have shown poor outcome.⁶

METHODS

This study was institutional based prospective study from October 2005 to December 2006.

Setting: Department of Pulmonary Medicine, Medicti Hospitals, Hyderabad, Telangana, India. The study Criteria includes: All patients presenting with hemoptysis and non-localizing/Normal chest radiograph and excludes: Patients unable to maintain adequate oxygenation during the procedure, patients undergoing repeat Bronchoscopy for other than diagnostic reasons, patients with recent myocardial infarction (MI) and angina, Patients with Hemoptysis and localizing lesions on chest radiograph, patients not willing to participate in the study.

All patients were subjected to a detailed history and physical examination including ear, nose, and throat (ENT) exams. As per inclusion criteria 18 patients were selected and all of them underwent fibre-optic-bronchoscopy at our Bronchoscopy suite. Routine bronchial washings were obtained and processed with appropriate stains for malignant cells and mycobacterium tuberculosis. Bronchial biopsies and brushings were performed as indicated.

RESULTS

A Total of 18 patients were included in this study after considering the inclusion and exclusion criteria. Of the 18 patients 14 (77.77%) were males and 4 (22.22%) were females. The age group among the patients studied varied from 21 to 65 with mean age of 40.11 with a standard deviation of 12.87 and most of them falling into the age group of 21- 40 (50%) years as depicted in Table 1.

Table 1: Age and sex distribution.

| Age | No. of patients | | Percent |
|---------|-----------------|---|---------|
| | M | F | |
| 21 – 40 | 7 | 2 | 50% |
| 41 – 60 | 6 | 2 | 44.44% |
| 61 - 80 | 1 | - | 5.55% |

Analysis of symptoms among patients, who were included in the study (Table 2), showed that apart from hemoptysis, cough was the most common symptom occurring in 17 patients (94.44%).

Table 2: Descriptive statistics of age.

| | N | Min | Max | Mean | SD |
|-----|----|-----|-----|-------|-------|
| Age | 18 | 21 | 65 | 40.11 | 12.87 |

Breathlessness, fever and chest pain were seen in decreasing frequency in that order in 8 (44.44%), 5 (27.77%), and 1 (5.55%) patients respectively. Multiple

symptoms simultaneously occurred in more than half of the patients. Among 18 patients evaluated for hemoptysis, site of bleeding could be identified in 7 (38.89%) patients but the exact cause of bleeding could not be identified. Bronchial Wash was done in 16 of 18 patients and only one of them (6.25%) was positive for malignant cells, which was later confirmed to be carcinoid.

Table 3: Symptomatology.

| Symptom | Number | Percent |
|----------------|--------|---------|
| Hemoptysis | 18 | 100 % |
| Cough | 17 | 94.44 % |
| Breathlessness | 8 | 44.44 % |
| Fever | 5 | 27.77 % |
| Chest pain | 1 | 5.55 % |

Table 4: Bronchoscopic findings.

| FOB Finding | Number | Percentage |
|----------------------|--------|------------|
| Normal | 7 | 38.88 % |
| Bleeding | 7 | 38.88 % |
| Inflammatory changes | 4 | 22.22 % |
| Growth | 1 | 5.55 % |

The complications following bronchoscopic procedure were very few, Hypoxia requiring postponement of the procedure to a later date occurred in 1 (0.77%) patient and respiratory distress requiring observation following the procedure occurred in 2 (1.56%) patients. However serious complications like arrhythmia and cardiac arrest did not occur in our study group.

Table 5: Complications.

| Complication | Total | Percent |
|----------------------|-------|---------|
| Hypoxia | 1 | 0.77 |
| Respiratory distress | 2 | 1.55 |
| Arrhythmia | 0 | 0 |
| Cardiac arrest | 0 | 0 |

DISCUSSION

Among 18 patients evaluated for Hemoptysis with normal chest x-ray, FOB was of little help except for identifying the site of bleeding in 7 (38.89%) patients and washings done in 16 patients yielding positive result only in one patient, accounting for a definitive diagnosis in 6.25% of the cases, however considering the safety profile and minimal invasiveness of the procedure it can still be considered in the diagnostic algorithm of such patients probably after initial CT examination as evidenced in some of the following studies. CV Jackson, PJ Savage et al, reviewed 48 patients with hemoptysis and normal chest roentgenogram who underwent bronchoscopic evaluation.³ Diagnosis other than endobronchial inflammation could be obtained in only 4 patients (8.3%) in the form of fibromuscular polyp in one

patient, MTB in one patient and carcinoma in two patients which closely correlates with our study.

In another series by Johard U et al, study was done between role of FOB in patients with hemoptysis with normal chest x-ray and hemoptysis with chest x-ray findings.⁷ In their study 1 out of 44 patients showed malignancy in normal chest x-ray group whereas incidence of malignancy in group with chest x-ray findings was 47%.

They concluded that bronchoscopy is to be recommended in cases with hemoptysis and chest X-ray findings whereas noninvasive investigations should suffice in patients with normal chest x-ray. S Tak, G Ahluwalia, SK Sharma et al, at AIIMS New Delhi evaluated 50 patients of hemoptysis and normal chest x-ray with FOB and CT, a definitive diagnosis was obtained in 34% of patients, of which HRCT gave a diagnosis in 30% of the cases and FOB in 10% of cases, finally the concluded that CT be obtained prior to FOB in all patients presenting with hemoptysis and normal or non-localizing chest radiograph.⁷ In the review of records of 58 patients by Santiago SM, Lehrman S et al, who underwent bronchoscopy for hemoptysis and normal chest x-ray, a diagnosis of malignancy was made in six (10.34%) patients at bronchoscopy. On follow up of such patients for 55.7±29.6 months 3.84% patients had subsequent diagnosis of malignancy.⁸

Hence they concluded bronchoscopy is indicated in patients with hemoptysis and normal chest x-ray. However review of literature revealed an overall 3% incidence of bronchogenic carcinoma in patients with hemoptysis and normal chest x-ray. They concluded that in such patients routine FOB may not always be indicated to rule out malignancy.³ In present study apart from identifying the site of bleeding, FOB in patients with hemoptysis and normal chest x-ray did not add much to the diagnosis or management of such patient which is consistent with most available literature.

CONCLUSION

Apart from identifying the site of bleeding in few cases, Fibre-Optic-Bronchoscopy in patients with hemoptysis

and normal chest x-ray has limited role in our study and CT examination of all such patients prior to bronchoscopy maybe of some help in making the diagnosis, however the small sample size in our study is a limitation which prevents us from generalising the findings.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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Cite this article as: Arun BJ, Mohan J, Bhaskar V, Nagaraj N. Role of fiberoptic bronchoscopy in cases of hemoptysis with normal chest radiograph. *Int J Adv Med* 2016;3:691-3.