ORIGINAL RESEARCH PAPER
Volume - 12 | Issue - 11 | November - 2023 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

ROLE OF FIBEROPTIC BRONCOSCOPY IN DIAGNOSIS OF LUNG DISEASES

Respiratory Medicine

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ABSTRACT

Introduction Fibreoptic bronchoscopy (FOB) is useful for diagnosis of respiratory diseases as it helps in inspection of respiratory tree for any foreign body, endobronchial lesion, infections, malignancies and also aids in recovery of respiratory secretions. Fibreoptic bronchoscopy (FOB) is useful for diagnosis of respiratory diseases as it helps in inspection of respiratory tree for any foreign body, endobronchial lesion, infections, malignancies and also aids in recovery of respiratory secretions. **Material and method** This cross-sectional observation of 50 cases was done in NIMS&R a tertiary care hospital of Jaipur in Department of Respiratory Medicine from from January 2023 to August 2023. **Result** Present study included 50 patients most of the patients were from urban area (60%). Males (70%) were affected more frequently than females (30%). Male : Female ratio was 2:1 .60% of the patients were smokers. **Conclusion** Fiberoptic bronchoscopy have a high diagnostic yield in clinical practice. This procedure gives diagnosis when combined with clinical judgement and supportive investigations

KEYWORDS

Lung, Fiberoptic Bronchoscopy, Malignancy, Tuberculosis

INTRODUCTION

Fibreoptic bronchoscopy (FOB) is useful for diagnosis of respiratory diseases as it helps in inspection of respiratory tree for any foreign body, endobronchial lesion, infections, malignancies and also aids in recovery of respiratory secretions.[1] Today chest physicians examine chest Xrays which reveals pulmonary infiltrates and sputum examinations reveals negative for acid fast bacilli (AFB) irrespective of patient immune status. Exclusion of pulmonary tuberculosis (PTB) is must in developing countries like ours. Differential diagnosis in such cases includes non-mycobacterial infections, inflammatory and neoplastic lesions.[1]

Easy to perform sputum culture and microscopy can also show negative results and has a sensitivity ranging from 25 to 45%. It is seen that generally half of the cases of PTB are sputum smear negative for AFB and thus other samples collected are important to rule out occult tuberculosis or any other condition mimicking tuberculosis.[2]

Diagnostic yield of FOB depends on location of lesion. It also helps in early detection of lung cancer by inspecting the peripheral airways. It helps in treatment and monitoring of disease progression of rare diseases like spindle cell tumors of trachea and pulmonary alveolar proteinosis.[3] Fibreoptic bronchoscopy (FOB) is useful for diagnosis of respiratory diseases as it helps in inspection of respiratory tree for any foreign body, endobronchial lesion, infections, malignancies and also aids in recovery of respiratory secretions.

MATERIAL AND METHODS

We performed a observational cross sectional study of 50patients who came in Respiratory OPD from January 2023 to August 2023 in National Institute of Medical Sciences & Research, Jaipur.

Complete history, physical examination, routine laboratory investigation including complete blood count, coagulation profile, serological markers were done. Radiological study including Chest Xray and CT scan were done where necessary. Bronchoscopic findings were noted. Bronchial aspirate and bronchial biopsy were taken. These samples were sent for histopathological reporting.

Inclusion criteria

1) All patients of 18 years and above
2) Inconclusive clinical, radiological and routine laboratory investigations
3) Willing to give consent
4) Chest Xray findings shows persistent pulmonary lesions in form of collapse, nodule, mass, consolidation or pulmonary infiltrate.

Exclusion criteria

1) Who have respiratory failure and is on ventilator
2) Already diagnosed with following diseases
3) Lung cancer
4) Smear positive pulmonary tuberculosis
5) Blood dyscrasias
6) Myocardial infarction patients

Data was collected and compiled in MS excel spreadsheet. Statistical analysis was done using EPI Info version 7.2.1.0 statistical software.

RESULT

Table 1: Demographic features of patients (N=50)

Features	Number	Percentage (%)
Male	35	70
Female	15	30
Age (mean)	45	-
Rural	20	40
Urban	30	60

Present study included 50 patients most of the patients were from urban area (60%). Males (70%) were affected more frequently than females (30%). Male: Female ratio was 2:1 (table 1).60% of the patients were smokers.

Most of the patients belonged to 50-70 years of age (50%) followed by 18-30 years and 30-50 years, both showed 20% of patients and least were seen in 70-85 years of age (10%) [table 2).

Most common symptoms from which patients presented was cough (55%), followed by chest pain (40%), Breathlessness (35%), Hemoptysis (25%), weight loss (20%), fever (15%) and least was dyspnoea(10%) as seen in table 3.

Table 2: Age distribution of patients (N=50)

Age	Frequency	Percentage (%)
18-30	10	20
30-50	10	20
50-70	25	50
70-85	5	10
Total	50	100

Table 3: Clinical symptoms of patients (N=50)

Symptoms	Percentage
Cough	55

Hemoptysis	25
Dyspnoea	10
Fever	15
Weight loss	20
Chest pain	40
Breathlessness	35

Table 4: Diagnostic profile of patients (n=50)

Disease	Number	%
Tuberculosis	18	36
NSPI	10	20
Pneumonia	5	10
ILD	5	10
Bronchiectasis	4	8
Malignancy	6	12
Abscess	2	4
TOTAL	50	100

Final diagnostic profile of patients was tuberculosis as seen in 18 cases (36%). Out of these 18 cases 6 cases (33.33%) had endobronchial nodularity, increase secretions and mucosal changes in chest X-rays. These patients had tuberculosis confirmed by microscopic examination of biopsy and by culture in bronchial aspirate . Bronchial culture was positive in 14 cases (77.77%) and biopsy showed caseating granuloma in all 18 cases (100%).Acid fast bacilli was seen in 1 case.

Malignancy was seen in 6 cases(12%) and was found to be adenocarcinoma in 3 cases(50%) followed by squamous cell carcinoma in 2 cases (33.3%) and small cell carcinoma in 1 case (16.7%).

Pneumonia and Interstitial lung disease was seen in 5 cases (10%). Bronchiectasis was found in 4 cases (8%) and lung abscess was seen in 2 cases (4%). There were 10 cases (20%) which didn't fit in any category as they were inconclusive. In these 10 cases biopsy and BAL fluid were not able to reveal any abnormality thus was labelled as nonspecific pulmonary infection (NSPI) (table 4). Bronchoscopy was well tolerated by all the patients.

DISCUSSION

Bronchoscopy, is the process in which we can visualize whole bronchial tree and was performed by Gustav Killian from Germany in 1887.[4] In early days it was used just only in therapeutic uses like stricture dilation and removal of foreign body removal. In 1960 Ikeda first introduced fiberoptic bronchoscopy in diagnosis of evaluation of suspected cases of lung malignancy. But now its been used not only in diagnosis but also in lesion biopsy and disease staging. It is comfortable to use, safe and well tolerated by patients also.[4,5]

Advancement of fiberoptic bronchoscopy to video bronchoscopy helps in facilitating teaching and making the procedure more interesting for other observers.[5] Bronchoscopy is one of the gold standard procedure in diagnosing lung cancers.

A study from Gupta et al [6] revealed that males were more affected by respiratory ailments and underwent bronchoscopy far more than females. Mean age of males were found to be 48.4 and of females were 45.2 years. In other study done by Kapse et al[7] it was found that most patients were in 51-70 years (69.64%) followed by 30-50 years (23.2%) and remaining were above 70 years (7.14%). These findings are consistent with our study.

Rawat et al[8] reported in their study that cough (72.90%) followed by fever (58.12%), haemoptysis (25.12%), chest pain (55.67%) and dyspnoea (50.74%) were common symptoms. Our study showed that cough (55%), followed by chest pain (40%), Breathlessness (35%), Hemoptysis (25%), weight loss (20%), fever (15%) and dyspnoea (10%) were common symptoms.

Jain et al[9] found that 33.3% cases of suspected tuberculosis had normal bronchoscopy. Singh et al [10] reported growth as most common finding (32%), followed by carbon deposit (6.5%) and hypertrophied mucosa(4.4%). they also stated that 30% cases had normal bronchoscopy. This was not seen in our study.

Mohammad et al[11] found that pneumonia was seen in 98% patients and bacterial pneumonia was seen in 48.5% patients, P.jiroveci pneumonia in 1.4% and Candida species in 7.8% patients. Joss et al[12] stated that in 37 suspected cases of tuberculosis, 10 cases had normal bronchoscopy. Rao et al[13] found inflammation in 17.2% cases ,10.3% normal cases, malignancy in 6.8% and negative for malignancy in 31% cases. Gracia et al[14] found malignancy in 55 cases out of which 23 had adenocarcinoma, 22 had squamous cell carcinoma, six had small cell carcinoma and four had bronchoalveolar carcinoma. Clark et al[15] reported cryptogenic fibrosing alveolitis in 15 out of 25 cases, sarcoidosis in 4 cases, pneumoconiosis in 4 cases and carcinoma in 8 cases. These cases were similar to our study which showed tuberculosis (36%) followed by nonspecific findings (20%) and malignancy in (12%) cases.

Thus bronchoscopy helps in identifying and diagnosing the cause of the respiratory ailment from which the patient was suffering. Our study also helped in exposing a serious limitation by diagnosing ILD, NSPI and other non tubercular pathologies for which ATT (Anti tubercular therapy) was not only toxic but at the same time deferring patient from getting the correct diagnosis. This finding is similar to study done my Mohan et al[16].

CONCLUSION

Fiberoptic bronchoscopy have a high diagnostic yield in clinical practice. This procedure gives diagnosis when combined with clinical judgement and supportive investigations. Thus we can conclude that bronchoscopy should be considered in evaluation of patients who have respiratory ailments and have inconclusive radiological features. It also helps in categorization of malignancy cases as we can take biopsy and bronchial secretions during this procedure.

Funding
None as stated by authors

Conflict of interest
None as stated by authors

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