

Role of Fiberoptic Bronchoscopy (Fob) in Clinico-Radiologically Undiagnosed Cases of Respiratory Diseases.

Kumar A, Jain Vk, Mishra M, Maan L, Nayyar P

Dept. Of Respiratory Medicine, MG Medical College & Hospital, Jaipur

Abstract: Background: Respiratory diseases are commonly present and mostly diagnosed on routine clinical assesment and non invasive investigations. However some of the diseases are still undiagnosed and required invasive methods. FOB is one of the important invasive tool for diagnosis of diseases. Despite, recent technical innovations in bronchoscopy, routine FOB is practiced with high yield and cost effectiveness.

Results: Bronchial biopsy done in 40 cases with positive yield in 82.5% & all having malignancy lung. Bronchial brushing was done in 50 cases with diagnostic yield in 48% of various diseases. Profile of these cases was malignancy 36%, pulmonary tuberculosis 8% and atypical cells in 4%. Bronchial aspirate was done in all 75 cases with diagnostic yield in 28% cases. Out of them 20% having AFB positive, malignant cells 4% and atypical cell in 4% cases.

Conclusion: Routine FOB is important tool for diagnosis of various lung diseases.

Keywords: Bronchial Aspirate/Biopsy/Brushing, Fiberoptic bronchoscopy

I. Introduction

Era of bronchoscopy began when German laryngologist Gustav Killian in 1876 used oesophagoscope to remove pork bone from right main bronchus of Farmer. The indications of bronchoscopy are numerous both diagnostic & therapeutic based on presence of respiratory symptoms and or normal/ abnormal chest radiograph. Diagnostic use of bronchoscopy is mainly in malignancy, granulomatous diseases, unresolved pneumonia, various infections, ILD, haemoptysis, chronic cough, pleural effusion, lung collapse and pulmonary tuberculosis especially in presence of radiological infiltration and negative sputum smear for acid fast bacilli of suspected active diseases. Therapeutic uses of bronchoscope are removal of foreign body, secretion, mucus plug and debulking of malignant tumour and treatment of various other benign airway disorders¹⁻⁷. Thus bronchoscope has become an important diagnostic and therapeutic tool for management of chest diseases and revolutionised practice of pulmonary medicine⁸.

Most of studies on yield of FOB and its various procedures have been reported in literature on clinico-radiological suspected cases of lung cancer however not much studies are available on the yield of FOB in clinic radiological suspected cases of various lung diseases. We therefore planned this prospective study to assess the diagnostic yield of routine FOB in patients who are having clinico- radiological undiagnosed cases of respiratory disorders⁹.

II. Material & Methods

This study was done in 75 patients reporting to department of Respiratory medicine of Mahatma Gandhi Medical College and hospital, Jaipur. The patients who were having respiratory symptoms with or without radiological shadows, whose diagnosis is not made by routine investigations underwent flexible bronchoscopy. Detailed clinical history, physical examination and routine investigations were carried out in all participants. All

patients were subjected to Sputum examination for AFB, Grams staining, Pyogenic culture sensitivity, KOH staining, malignant cells, BT (Bleeding time), CT (clotting time), chest radiograph, ECG, haematological examination and CT thorax, if required were done. FOB was performed in all cases by flexible bronchoscope / video bronchoscope. As per bronchoscopic findings the tissue material were collected through various procedures i.e. Bronchial Brushing, Bronchial Washing/Aspirate, Tran's bronchial biopsy (TBB). The specimens were sent for microbiological and histo-pathological examinations.

III. Results

There were 75 patients in the study suspected of having various lung diseases as per clinic-radiological features and were subjected to FO

TABLE No-1

Gender profile of suspected cases of various lung diseases

Gender	NO. of cases	(%)
Male	58	77.33
Female	17	22.67
Total	75	100.00

Out of total 75 cases (77.33%) were males and (22.67%) were females. 56% were in the age groups of 41-60 years both in males and females, (17.33%) were in 20-40 year and (18.66%) cases were above 60 years of age groups. Majority of cases were having respiratory symptoms of chest pain in (66.66 followed by cough in (62.66%), breathlessness in (44%), haemoptysis in(34.66%) and hoarsness of voice in (18.66%) cases.

TABLE NO- 2

Profile of Radiological Lesions in suspected cases of lung diseases
(N- 75)

Type of lesions	NO	%
Hilar enlargement	23	30.67
Collapse	21	28
Consolidation	21	28
Mass lesion	15	20
Cavity	12	16
Collapse-consolidation	9	12
Pleural effusion	8	10.67
Fibrosis	8	10.67
Rib erosion	3	4
Diaphragmatic elevation	1	1.33
S.P.N.	0	0

Most of the cases (30.67%) were having hilar enlargement followed by 28% collapse, 28% consolidation , 20% mass lesion, 16% cavity, 12% collapse consolidation , 10.67% pleural effusion, 10.67% fibrosis, 4% rib erosion and 1.33% diaphragmatic elevation case.

TABLE - 3

Profile of diagnostic procedures performed in Suspected cases of lung diseases (N-75)

Procedure	NO	%
Bronchial Biopsy	40	53.33
Bronchial Brushing	50	66.67
Bronchial aspirate	75	100

Above table shows that bronchial biopsy was performed in 40 (53.33%), bronchial brushing in 50 (66.67%) and bronchial aspirate in all cases. In Right side airways majority of cases 24% were having growth followed by 20% hyperaemia, 14.67% inflammation, 9.33% bulging, 6.67% puckering, 6.67% secretion and 4% narrowing. In Left side airways majority of cases 20% were having secretions followed by 17.33% growth, 16% hyperaemia, 10.67% inflammation, 1.33% puckering and 5.33%bulging.

TABLE - 4

Comparative yield of Bronchial biopsy, Bronchial brushing and aspirate in suspected cases of lung disease
(N-75)

Procedures	No of patients	Diagnosis	Diagnostic yield (%)
BB+BB+BA	37	37	100%
Bronchial biopsy	40	33	82.5
Bronchial brushing	50	24	48
Bronchial aspirate	75	21	28

Individual diagnostic yield of bronchial biopsy was 82.5% followed by bronchial brushing (48%) and bronchial aspirate in (28%) and combind yield of the three procedures are 100%

TABLE - 5

Overall yield of FOB for Final Diagnosis in suspected cases of lung diseases
(N-75)

Final diagnosis	No	%
Malignancy	38	50.67
Pulmonary tuberculosis	15	20.00
Pyogenic infection	11	14.67

Overall Diagnostic yield	64	85.33
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Majority of cases 50.67% diagnosed as malignancy, followed by 20% pulmonary tuberculosis and 14.67% Pyogenic infection cases with overall diagnostic yield of FOB is (85.33%).Majority of cases 63.10% were having Squamous cell carcinoma followed by 28.95% small cell carcinoma and 7.89% adeno carcinoma

IV. Discussion

Fiberoptic bronchoscopy (FOB) is useful and safe procedure for directly visualizing airways and to diagnose various lung diseases specially which are not diagnosed on routine investigations. Being an important common procedure, FOB is commonly performed by chest physicians. Out of total 75 patients, majority 58 (77.23%) were males, similar to our study other studies also reveals higher male predominance as reported by Huhti et al. (1980)¹⁰ 6:1, Jindal et al.

(1982)¹¹. Maximum patients in our study presented with respiratory symptoms of chest pain (66.66%) followed by cough (62.66%), breathlessness (44%), haemoptysis (34.66%) and hoarseness of voice (18.60%) were the main respiratory symptoms observed. Ochsner (1956) found cough 87%, pain chest 60%, haemoptysis 52% and breathlessness in (46%). Hyde and Hyde (1974)¹² also found cough in 74%, pain chest 75%, breathlessness 55% and haemoptysis (29%). Radiological profile in our study were hilar enlargement (30.67%) followed by (28%) collapse, (28%) consolidation, (20%) mass lesion and (12%) collapse consolidation suggestive of malignancy. The profile of other radiological lesions were cavity (16%), pleural effusion (10.67%), fibrosis (10.67%), rib erosion (4%) and diaphragmatic elevation (1.33%) suspecting or supporting to various lung disease especially tuberculosis, infection and malignancy. Garg et al. (2013)¹³ also reported similar radiological findings in suspected cases of various lung diseases where FOB was indicated.

Individual diagnostic yield of bronchial biopsy was 82.5% followed by bronchial brushing (48%) and bronchial aspirate in (28%) and combined yield of the three procedures are 100% in our study. Half of the cases were diagnosed as malignancy, 1/5 cases as pulmonary tuberculosis and infection in 15% cases. Therefore FOB can be one of the important tool for clinic radiological undiagnosed cases of various lung diseases and better management of confirmed lung diseases.

V. Conclusion

The diagnostic yield of FOB with routine and basic procedures like endobronchial biopsy, BAL fluid analysis and brush cytology is satisfactory. Routine flexible bronchoscopy techniques continue to have a high diagnostic yield in current clinical practice in common lung conditions. We believe that the procedure is more useful in diagnosis when combined with a sound clinical judgment and appropriate supportive investigations.

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