



Original Article

Diagnostic Yield of Flexible Fiberoptic Bronchoscopy (FOB) in Clinico-Radiologically Undiagnosed cases of Pulmonary Diseases in a Tertiary Care Hospital

Authors

Dr Raaghav Gupta¹, Dr VK Jain²

Department of Respiratory Medicine, Mahatma Gandhi Medical College and Hospital, Jaipur, Rajasthan

Corresponding Author

Dr Raaghav Gupta

Email: raghav_161@yahoo.com

Abstract

Background: *Fiberoptic bronchoscopy (FOB) is one of the important invasive tool for diagnosis of pulmonary diseases specially in undiagnosed cases with routine non-invasive investigations. Despite, recent technical innovations in bronchoscopy, routine FOB is practiced with high yield and cost effectiveness.*

Materials and Methods: *This prospective study was done in patients reporting to Department of Respiratory Medicine (OPD & IPD) from December 2016 to December 2017 of Mahatma Gandhi Medical College & Hospital, Jaipur.*

Results: *Among 80 patients 68 (85%) were males & 12 (5%) females. Age group of maximum patients was above 50 years. Most common clinical manifestation was Cough 55 (69%), commonest indication for bronchoscopy was Hilar Enlargement 31.25%, Consolidation 21 %, Collapse 20 %, Mass lesion 15 %, Pulmonary Infiltrates 6% etc, most common finding on bronchoscopy was Endobronchial Growth in 38 (47.5%) patients, Overall yield of FOB in final diagnosis of undiagnosed cases of lung diseases was 88.75% and highest individual diagnostic yield of diagnostic procedure done through fob was of bronchial biopsy 55(84.7%).*

Conclusion: *Fiberoptic bronchoscopy can be successfully employed for the diagnosis of lung diseases, including malignancies and granulomatous lesions. It is extremely usefull in finding specific etiologies of various lung diseases.*

Keywords: *Fiberoptic bronchoscopy.*

Introduction

The era of bronchoscopy began with Gustav Killian in 1876 when he removed a pork bone from a farmer's airway, using esophagoscope. In 1967 Shigeto Ikeda revolutionized field of bronchoscopy by his innovation of fiberoptic

bronchoscope¹. Today, bronchoscopy & interventional pulmonology have become an integral part of pulmonary medicine & a established subspecialty, The flexible fiberoptic bronchoscopy (FFB), has greatly enhanced understanding of lung diseases has evolved as

most commonly used diagnostic tool in pulmonary medicine.

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, interstitial lung diseases, haemoptysis, chronic cough, pleural effusion, lung collapse & PTB. 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 disorders etc.

Aim and Objective

1. To know the overall yield of FOB for final diagnosis of lung diseases, who have clinico-radiological suspicion.
2. To know the comparative yield of individual procedures done through bronchoscope

Materials and Methods

This prospective study was done in patients reporting to Department of Respiratory Medicine (OPD & IPD) from January 2016 to January 2017 of Mahatma Gandhi Medical College & Hospital, Jaipur.

Patients who are having respiratory symptoms with radiological opacities in form of hilar mass, collapse, pulmonary Infiltrates, consolidation, cavity etc were included. Suspicion of malignancy was kept higher.

- **Inclusion Criteria:-** Patients presenting with various respiratory symptoms like Cough (Dry/productive), Chest Pain/Heaviness, breathlessness, haemoptysis, fever & hoarseness of voice etc single or in combination & not responding to treatment specially antibiotics & anti - tubercular drugs. Patients with Clubbing, lymphadenopathy, vocal cord palsy, signs

of svc obstruction etc. Patients with radiological findings such as lung collapse, consolidation, mass lesion, infiltration, hilum enlargement, non resolving shadows etc.

Exclusion Criteria: Patient not fit for bronchoscopy, refusal to give consent for bronchoscopy

Detailed clinical history, physical examination & routine investigations were carried out. Sputum examination (AFB Staining, Gram Staining, Culture and sensitivity, KOH staining, Malignant cells), Chest X-rays PA & or Lateral. CT thorax was done in some cases. FOB was performed mainly through transnasal route under topical anaesthesia (2% lignocaine).

During Bronchoscopy:

- Patients were monitored by pulse oximetry.
- Local Anaesthesia: Lignocaine 2% jelly was used for local anaesthesia of nares.
- FOB was introduced through the nose and nasopharynx, vocal cords were then sprayed by lignocaine 4% under direct vision with spray as you go further technique, having traversed through the cords, anaesthesia of the trachea, carina and bronchi was achieved by using 2% lignocaine boluses spray via the bronchoscope.

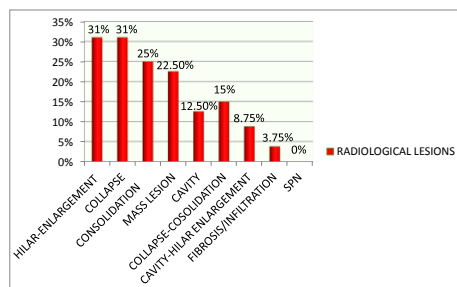
After Bronchoscopy

Patients were advised fluids after one & half hours of completion of procedure and solid food after 2 hour of procedure.

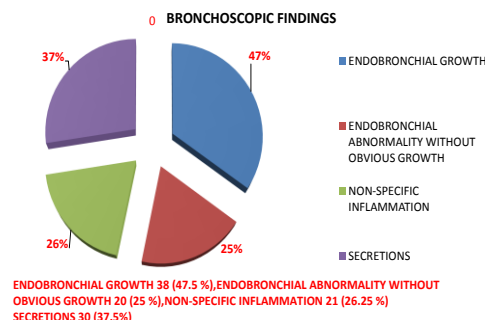
Results

In this study FOB was done in 80 patients who were suspected to have various lung diseases on clinico-radiological ground from January 2016 to January 2017 in Department of Respiratory Medicine, Mahatma Gandhi Medical College and Hospital Jaipur.

PROFILE OF RADIOLOGICAL LESIONS IN SUSPECTED CASES OF LUNG DISEASES

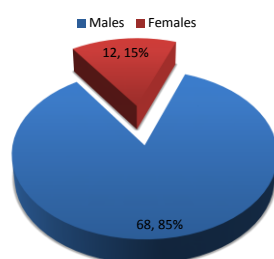


FINDINGS OF BRONCHOSCOPY



ENDOBRONCHIAL GROWTH 38 (47.5 %), ENDOBRONCHIAL ABNORMALITY WITHOUT OBVIOUS GROWTH 20 (25 %), NON-SPECIFIC INFLAMMATION 21 (26.25 %), SECRETIONS 30 (37.5%)

GENDER PROFILE FOR VARIOUS LUNG DISEASES



OF TOTAL 80 PATIENTS MAXIMUM- 68 (85 %) WERE MALES & 12 (15 %) FEMALE.

DIAGNOSTIC YIELD OF INDIVIDUAL PROCEDURES DONE THROUGH FOB

PROCEDURES	NUMBER OF PATIENTS	DIAGNOSIS NUMBER	DIAGNOSTIC YIELD %
BRONCHIAL BIOPSY	59	50	84.74
BRONCHIAL BRUSHING	65	39	60
BRONCHIAL ASPIRATE	80	27	33.75

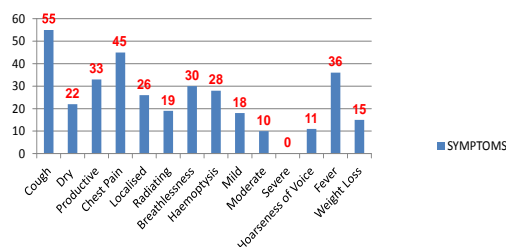
INDIVIDUAL DIAGNOSTIC YIELD OF BRONCHIAL BIOPSY WAS 84.74 %, BRONCHIAL BRUSHING WAS 60 % AND BRONCHIAL ASPIRATE WAS 33.75 %.

OVERALL DIAGNOSTIC PROFILE OF VARIOUS DISEASES (N-80)

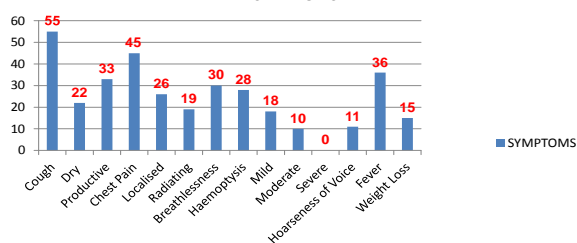
FINAL DIAGNOSIS	NUMBER	%
MALIGNANCY	46	60
TUBERCULOSIS	13	16.25
PYOGENIC INFECTION	8	10
MALIGNANCY WITH TUBERCULOSIS	2	2.5
INADEQUATE SAMPLE (MALIGNANCY SUSPECTED CONFIRMED BY OTHER METHODS)	4	5
NON-CONCLUSIVE	5	6.25
TOTAL	80	100

Overall yield of FOB in final diagnosis of undiagnosed cases of lung diseases was 88.75%.

SPECTRUM OF RESPIRATORY SYMPTOMS IN SUSPECTED CASES OF LUNG DISEASES



SPECTRUM OF RESPIRATORY SYMPTOMS IN SUSPECTED CASES OF LUNG DISEASES



Discussion

Of total patients majority 68 (85 %) of patients were males & 12 (15%) were females. Similar results were reported on gender predominance by Huhti et al 1980. Age group of maximum patients was above 60 years. Bronchogenic carcinoma was found to have association with increasing age of patients. In our study radiological opacity was commonest indication for performing bronchoscopy keeping in mind suspected malignancy in patients. It correlates with studies conducted by Garg B et al² & Jindal et al³.

Cough was the commonest indication (68.75%) for bronchoscopy, which is similar to a study conducted by Prakash UB et al⁴. Most common finding at bronchoscopy was endobronchial

growth, seen in 47.5% of cases and 25% had endobronchial abnormality without obvious growth, 26% had non-specific inflammation & 37 % had secretions.

In our study bronchial brushing was done in 65 cases (81.25 %) and confirmed diagnosis in 39 cases (60 %) which is almost similar to study done by Zoss et al. (2006)⁵. Bronchial biopsy was done in 59 cases (73.75 %), overall diagnostic yield of bronchial biopsy procedure in our study was 50 (86.74%) which is similar to yield reported by Kavle et al. (1996)⁶. Bronchial aspirate was taken in all suspected cases of various lung diseases 80 having a overall diagnostic yield of 27 (33.75 %) which is same as reported by Garg et al.(2013)⁷.

Overall yield of FOB in final diagnosis of undiagnosed cases of lung diseases was 88.75%. Which included Malignancy 48 (60%), Tuberculosis 13 (16.25%), Pyogenic infection 8 (10%), Malignancy and Tuberculosis 2 (2.5 %), Inadequate sample (Malignancy suspected, but confirmed by other methods) 4 (5%), Non-conclusive 5 (6.25%). Findings are in concordance with study done by Hansen et al⁵ which substantiated the fact that with FOB a sufficient tissue can be attained making a diagnosis in maximum cases.

Conclusively, Fiberoptic bronchoscopy can be successfully employed for the diagnosis of lung diseases, including malignancies and granulomatous lesions. It is extremely useful in finding specific etiologies of various lung diseases.

References

1. Killian G: Direct endoscopy of upper air passages and oesophagus: Its diagnostic and therapeutic value in search for and removal of foreign body. J Laryngol Rhinol Otol 1902;18:461-468.
2. Huhti E, Sutinen S, Reinila A. Lung cancer in a define geographical area: History and histological types. Thorax, 1980;35:660-667.
3. Garg B et al .Indian J Chest Dis Allied Sci 2013;55:145-148].
4. Jindal SK, Behera D, Dhand R, Kashyap S, Malik SK. Flexible fiberoptic bronchoscopy in clinical practice: a review of 100 procedures. Indian J Chest Dis Allied Sci 1985; 27:153-8.
5. Prakash UBS, Offord KP, Stubbs SE. Bronchoscopy in North America: The ACCP survey. Chest 1991; 100: 1668-75.
6. Foos L, Patuto N, Chhajed PN, Tamm M; Diagnostic Yield of Fiberoptic Bronchoscopy in current practice. SWISS MED WKLY 2006;136;155-159/
7. Kavle PA, Bode Fr, Kini S. Diagnostic accuracy in lung cancer: comparison with sputum and bronchial washing. Ats Cytol, 1976;20(5):446-53.
8. Garg B, Sood N, Sidhu UP, Malhotra V; Role of fiberoptic bronchoscopy and utility of bronchial washing and brushing in diagnosis of lung diseases. Indian J Chest Dis Allied Sci 2013;55:145-148.
9. Hansen R, Zavala DC, Rhodes ML. Transbronchial lung biopsy via flexible fiberoptic bronchoscopy. Am Rev Respir Dis 1986; 114:112-28.