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ROLE OF FIBEROPTIC BRONECHOSCOPY IN THE DIAGNOSIS OF LUNG DISEASES: AN EXPERIENCE WITH 164 CASES

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ABSTRACT

Background: The aim of this cross sectional study is to determine the role of fiberoptic bronchoscopy in the diagnosis of lung diseases and observe the clinical presentation, diagnosis, complications and demographic characteristics of the patient in Jinnah Hospital Lahore. The study was performed in the Department of Pulmonology, Jinnah Hospital / Allama Iqbal Medical College Lahore from January 2007 to June 2008.

Methodology: This study was completed on 164 patients who underwent bronchoscopy for various reasons. The data was analysed on the basis of demography, clinical symptoms, radiological and bronchoscopic findings, type of specimen taken, and their microbiological and histopathological reports for definite diagnosis.

Results: A total of 164 patients underwent bronchoscopy during this period. Among these 99 (60%) were males and 65 (40%) were females. Age of the females ranged from 16 – 70 years with mean 48.5 ± 13.2 and the males were from 14 – 85 years with mean age 57.8 ± 18.1. Fifty eight (35.4%) were non smokers whereas 106 (64.6%) were smokers. Among them 63 (38.4%) presented with cough while 37 (22.5%) with cough and fever and 23 (14.0%) with chest pain. Hoarseness of voice was present in 6 (3.7%) and 35 (21.3%) presented with haemoptysis. Right lung involvement was observed in 74 (45.2%) and left lung in 52 (31.7%), whereas bilateral involvement was observed in 30 (18.3). On bronchoscopy in 84 subjects, fungating mass was present in 30 (18.2%), infiltrative lesion was observed in 10 (6.8%), nodular mass was seen in 8 (4.7%), thick pussy secretion was obtained in 25 (15.1%), external compression was found in 05 (3.0%) subjects and vocal cord paralysis was present in 06 (3.6%). Among 164 patients we were able to reach a definite diagnosis in 109 (66.4%). There was no complication in 140 (85.4%) patients, while mild haemoptysis was present in 7 (4.3%), 13 (8%) had low grade fever and 4 (2.4%) developed bronchospasm.

Conclusion: Bronchoscopy is a safe procedure for the diagnosis of bronchogenic carcinoma and also for smear negative pulmonary tuberculosis. The incidence of complication is also very low in experienced hands.

Keywords: Bronchoscopy. Tracheobronchial Tree. haemoptysis.

INTRODUCTION

Bronchoscopy is a procedure in which a hollow flexible tube called a bronchoscope is inserted into the air ways through the nose or mouth to provide a view of the tracheobronchial tree. It is also used to collect bronchial and / or lung secretions and to perform tissue biopsy.[1] Bronchoscopy may be done to identify the causes of air way problems such as unexplained haemoptysis, cough and wheezing or to diagnose any opacity on the chest-x-rays and CT scan, or to evaluate and treat the growth in the airway. Bronchoscopy is usually performed in an endoscopy room, but may also be performed at the bed side. The physician observe the trachea, bronchi and the mucus lining of these airways for any abnormalities that may be present. If samples are needed, a bronchial lavage may be performed for analysis. Bronchial brushes, needles or biopsy forceps may also be introduced through the bronchoscope to collect tissue samples from the lungs.[2]

METHODOLOGY

This cross – sectional study was conducted on 164 subjects had undergone fiberoptic bronchoscopy for different indications irrespective of age and sex during a period from January 2007 to Jun 2008. Patients with body temperature of more than 100°F, underlying cardiac disease, refractory hypoxaemia, low platelet count, and renal impairment were excluded from the study.

Data Analysis

Categorical variables like gender, smoking habits, symptoms, radiological distribution, bronchoscopic findings, diagnosis and definite complication of bronchoscopy were presented as frequencies and per-

centage. On the other hand continuous variable age of patient was expressed as mean ± S.D. All data entered and analysed through statistical software SPSS version 15.

RESULTS

A total of 164 patients underwent bronchoscopy during this period. Among these 99 (60%) were males and 65. (40%) were females (Table 2). Age of the females ranged from 16 – 70 years with mean 48.5 ± 13.2 and the males were from 14 – 85 years with mean age 57.8 ± 18.1 (Table 1). Fifty eight (35.4%) were non smokers while 106 (64.6%) were smokers with pack year history of 10 – 15 pack years in 62 (37.8%), 15 – 20 pack years 33 (21.1%) and more than 20 pack year 11 (6.7%) (Table 2). As far as clinical presentation was concerned 63 (38.4%) presenented with cough while 37 (22.5%) with cough and fever and 23 (14.0%) with chest pain. Hoarseness of voice was present in 6 (3.7%) and 35 (21.3%) presented with haemoptysis (Table 2).

Table 1: *Age Distribution in 164 patients.*

Gender	*N*	*Minimum Age*	*Maximum Age*	*Mean ± S.D*
Female	65	16	70	48.5 ± 13.2
Male	99	14	85	57.8 ± 18.1

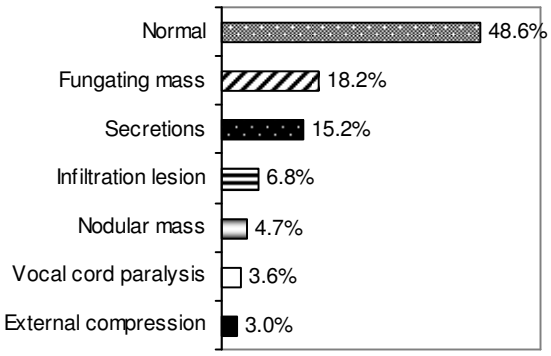

Fig. 1: *Bronchoscopic Findings.*

On radiological findings there was right lung involvement with different zones i.e. upper, middle, lower and hilar was observed in 74 (45.2%) and left lung at different levels in 52 (31.7%), while bilateral involvement was observed in 30 (18.3). In 8 (4.9%) subjects x-ray chest was within normal limits (Table 2).

On bronchoscopy 80 (48.6%) showed no abnormality, and among the remaining 84 subjects, fungating mass was present in 30 (18.2%), infiltrative lesion was observed in 10 (6.8%), nodular mass was seen in 8 (4.7%), thick pussy secretions were obtainned in 25 (15.1%), external compression was found in 05 (3.0%) subjects and vocal cord paralysis was observed in 06 (3.6%) (Fig. 1).

Different samples like bronchial biopsies were taken in 50 patients. Bronchial washings in 138

Table 2:

Variables	*n*	*%*
Gender		
Female	65	40
Male	99	60
Smoking habits		
Non-Smoker	58	35.4
10 – 15 pack yrs	62	37.8
15 – 20 pack yrs	33	20.1
> 20 pack yrs	11	6.7
Clinical symptoms		
Cough	63	38.4
Cough with fever	37	22.5
Chest pain	23	14.1
Haemoptysis	35	21.3
Hoarseness of voice	6	3.7
Radiological distribution		
Right lung involvement	74	45.2
Left lung involvement	52	31.7
Bilateral involvement	32	18.3
Normal X-ray	8	4.8
Definite diagnosis		
Carcinoma lung	40	37
PTB	39	36
Bacterial infection (LRTI)	30	28

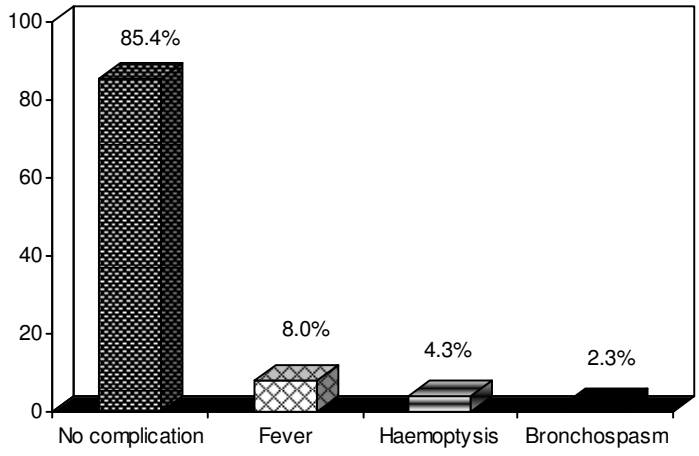

Fig. 2: *Complication of Bronchoscopy.*

subjects and bronchial brushings in 50 and in some subjects all samples were taken simultaneously. Bronchogenic carcinoma was diagnosed in 40 subjects (24%). Among these 40 patients 20 were of squamous cell carcinoma, 15 were having adenocarcinoma, 4 were with small cell carcinoma and one was of large cell type.

Acid fast bacilli smear was positive in 28 subjects and culture was positive in 11 for AFB, whereas routine culture was positive in 30 subjects.

Among the 164 patients we were able to reach a definite diagnosis in 109 (66.4%) (Table 2). We observed no complication in 140 (85.4%) patients, whereas mild haemoptysis was present in 7 (4.3%), 13 (8%) had low grade fever and 4 (2.4%) had evidence of bronchospasm. All these symptoms settled quickly with medications (Fig. 2).

DISCUSSION

Bronchoscopy is used for diagnostic as well as therapeutic purpose[3]. The reported frequency of mortality from this procedure is from 0 to 0.5%.[4] All the patients undergoing fiberoptic bronchoscopy should be clinically evaluated along with latest CXR.[5] In our study visible mass was present in 48 (29.2%) patients. We performed bronchial biopsies, brushings and washings in all the cases. Among these 48 patients with obvious mass, 40 were labelled as malignant on histopathology. Combined yields of all the three modalities was 84%. Fuladi AB et al 2004 in their study have found biopsy positive results in 76% with visible tumour and positive washings in 50% with combined yield of 95%.[6] On the other hand Shoaib et al in 2002 observed a combined yield of 95% in these cases[7]. Rao and Hasan in 2006 found a combined yield of 75%.[8]

In our study 39 (2.3%) subjects were labelled as having pulmonary tuberculosis (PTB). Out of these 39 PTB cases, 28 (72%) were found to be AFB positive while in 11 (28%) culture was positive for AFB. While Ansari et al 2005 have found AFB positive in 42% of their cases.[9] We were able to have a definite diagnosis in 109 (66.4%) patients that is slightly better than another study conducted at Karachi in which they made a definite diagnosis in 53% cases, probably due to the greater number of patients in our study. In the present study majority 85.4% of the patients had no complication of the procedure while only 14.6% had some kind of complications like haemoptysis (4.7%), fever (8%) and bronchospasm (2.3%). These findings are in accordance with a few other studies.[8,10,11]

It can be ***concluded*** from this study that bronchoscopy is a very safe procedure for the diagnosis of bronchogenic carcinoma and also for smear negative PTB cases. The incidence of complications is very low in experienced hands.

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