

African Journal of Medicine and Medical Sciences

Editor: O.A. Ladipo
Assistant Editors:
B.O. Osotimehin and A.O. Uwaifo

Volume 18
1989

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Flexible fibre optic bronchoscopy in Ibadan: report of 6 years' experience

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Summary

This study describes 6 years' experience of flexible fibre optic bronchoscopy (FFB) at the University College Hospital, Ibadan. Ninety-three bronchoscopies were carried out in 83 patients. The study revealed 22 patients with primary lung malignancies, four with tuberculosis, three with secondary malignancies, three with sarcoidosis, and two with interstitial fibrosis. The yield from FFB was 44% and complications were encountered in only three patients, with no mortality.

Résumé

Cette étude de 6 ans décrit l'expérience de la technique 'bronchoscopie fibre-optique flexible' (flexible fibre optic bronchoscopy [FFB]) à l'université College Hospital. Quarante-treize bronchoscopies étaient conduites sur 83 malades. Les résultats révèlent 22 avec désordre primaire malin de poumon, trois avec sarcoidoses, quatre avec tuberculoses, et deux avec fibreux d'interstitial. Le rapport de FFB était 44% avec complications qu'en trois malades mais sans mortalité.

Introduction

The flexible fibre optic bronchoscope (FFB), developed by Ikeda [1,2], has single-handedly revolutionized pulmonary medicine. The literature on its many uses in the economically advanced countries is vast [3,4]. Carcinoma of the bronchus still constitutes the most important finding in most patients and attempts have been made over the past decade to improve the diagnostic yield of FFB in detection of lung cancers.

There is a dearth of information on the use of FFB in Africa and the recent report from Ethiopia [5] is the only one in the region. The scanty information may be due to the small number of trained pulmonologists, lack of facilities and the relative rarity of lung cancer in the area. This report describes 6 years' experience — January 1980 to December 1986 — of FFB at the University College Hospital, Ibadan, a tertiary health-care centre.

Subjects and methods

The study was carried out at the chest unit of the University College Hospital, Ibadan. The subjects were all patients referred to the clinic with undiagnosed pulmonary shadows of non-infective or infective aetiology; patients with unexplained haemoptysis with normal or abnormal chest radiographs were also included.

All subjects were fully evaluated and serial specimens of sputum were sent for routine microscopy and bacterial culture, including acid-fast bacilli. The Mantoux test was routinely carried out on all subjects who also had posterior-anterior chest radiographs. Flexible fibre optic bronchoscopy was carried out using the Olympus BF-B2 bronchofibroscope (Olympus Corporation of America, U.S.A.). Local anaesthesia was achieved using 10% xylocaine spray administered into the nostrils and posterior nasopharynx. Xylocaine gel was applied to both nostrils as a lubricant and an anaesthetic, while 2% xylocaine spray was used to anaesthetize the vocal cords and the bronchial tree during the procedure. Intramuscular diazepam (10 mg) and atropine (0.1 mg) were usually given as premedications 30 min before the procedure.

The two bronchial trees were usually inspected up to the fifth or sixth generations of

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bronchi. Brushings of suspicious lesions were sent for cytology and biopsies were taken for histology. Material aspirated from such lesions was usually collected in a trap and sent for microbiological examination and cytology. Transbronchial lung biopsy was carried out in those subjects with diffuse lung shadows or where endobronchial lesions were not detected. The subjects were usually instructed not to take anything orally for 4–6 h after the procedure to prevent aspiration.

Results

A total of 93 FFBs were performed in 83 Nigerian subjects; the procedure was carried out twice in 10 subjects. Repeat examinations were usually because of unsatisfactory initial examinations and negative histology reports, in subjects with a high clinical suspicion of malignancy. Of these 10 subjects, two had confirmation of lung carcinoma on the second biopsy while one proved to be tuberculosis.

Table 1. Age and sex distribution of subjects who had an FFB

Age range (years)	Sex		Total
	Male	Female	
21 – 30	5	3	8
31 – 40	12	7	19
41 – 50	25	10	35
51 – 60	12	5	17
61 – 70	3	1	4
Total	57	26	83

Table 1 shows the age and sex distribution of the subjects studied. All were Nigerians. The youngest subject was 20 years old while the oldest was 69 years old (mean age of 48.5 years). There were 52 males and 24 females (M:F = 2:1). The procedure was well tolerated in most of the subjects and was abandoned in only 4 (not included in the analysis). These 4 subjects were quite agitated and it was impossible to get past the vocal cords.

Table 2 shows the histological types of the malignancies encountered, and combines the

Table 2. Histological diagnosis from bronchial biopsy, brushings and cytology of bronchial aspirate

Histological diagnosis	Number of cases
Primary lung carcinoma	
Squamous cell carcinoma	8
Small cell carcinoma	4
Adenocarcinoma	6
Large cell undifferentiated carcinoma	2
Metastatic carcinoma	
Nasopharyngeal carcinoma	1
Oesophageal carcinoma	1
Primary liver cell carcinoma	1
Inflammatory lesions	
Tuberculosis	2
Non-specific	6
Negative	35
Total	66

results of the biopsy and cytology of bronchial secretions and brushings. A total of 20 primary lung malignancies were encountered, with squamous cell carcinoma being the commonest histological variety.

Table 3 shows the results from the transbronchial lung biopsy, including the number of cases of sarcoidosis and interstitial fibrosis diagnosed by this process. One of the cases diagnosed as sarcoidosis presented with recurrent haemoptysis and had previously been treated as tuberculosis. The subjects with tuberculosis in this series all had negative sputum.

Table 3. Histological results of transbronchial lung biopsy by FFB

Histological diagnosis	Number of cases
Lymphoma	1
Alveolar cell carcinoma	1
Adenocarcinoma	1
Tuberculosis	2
Sarcoidosis	3
Fibrosing alveolitis	2
Negative	17
Total	27

smears and cultures, but acid-fast bacilli were isolated on cultures of bronchial secretion in three subjects, and on the culture of the biopsy specimen in one subject.

Non-specific inflammatory changes were found along the bronchial tree in six cases, and these improved with appropriate antibiotics.

There were few complications in this study. Two subjects had haemoptysis but this was not severe enough to require blood transfusion in either of them. One subject had a small pneumothorax which resolved spontaneously.

Discussion

Ninety-three FFBs is quite a small number when compared to such figures as the 4000 reported by Zavala [6], and the review of 24,521 FFBs from various centres in the U.S.A. [7]. The overall percentage of positive results obtained in our study (44%) is also low when compared to percentages of 80-90% recorded by most workers [8,9]. However, our yield is much higher than the figure of 21% from a total of 218 FFBs reported from Ethiopia [5]. Considering the relative rarity of bronchial carcinoma in the African, the small number of FFBs recorded in this study is not surprising, especially as bronchial carcinoma constitutes the most important indication for fibre optic bronchoscopy. Furthermore, the authors were still gaining experience with the technique, and histological interpretation of the rather small specimens obtained from FFB biopsies was technically difficult. More importantly, all the biopsies were taken without fluoroscopy which has been reported to increase significantly the positive yields [6]. These factors undoubtedly contributed to the rather low positive yields in our study.

In this study, a total of 22 cases of bronchial carcinoma were diagnosed with various histological varieties. Although this number is small it is the most comprehensive study in this country, as previous studies lacked definitive histological diagnosis [10,11]. Four cases of tuberculosis were diagnosed in this study which is not surprising considering the high prevalence of the disease in this environment. The transbronchial biopsy and brushings have been reported to be useful in the diagnosis of sputum-negative cases of pulmonary tubercu-

losis [12,13]. Recent reports have shown an increased use of the FFB in assessing pulmonary shadows in patients with suspected metastatic cancer of the lungs, as this will determine the modality of treatment [14]. In this study, three metastatic carcinomas, from the oesophagus, nasopharynx and liver were found. Also of interest were the three cases of sarcoidosis diagnosed by transbronchial biopsy.

Flexible fibre optic bronchoscopy is a safe procedure and complications are few. Minor complications such as mild haemoptysis, infection and small pneumothorax have been reported to vary from 3 to 8% [6,15,16]. Major complications include massive haemoptysis, tension pneumothorax and spasm of the vocal cords which can lead to death [7,17]. In this study, only three subjects developed complications (3.2%), two had mild haemoptysis, and one subject had a small pneumothorax. These were considered minor as they resolved spontaneously. It is doubtful if these could have been prevented, considering that the complications occurred following transbronchial lung biopsy which is well-known to be associated with such complications [17].

From this study, it can be inferred that FFB is a useful, simple and safe procedure. It is expected that with time and with improvement in the country's finances, its use will become more widespread.

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(Accepted 5 May 1988)

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