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Original Research

Assessment of histopathological yield in bronchoscopic biopsies in tuberculosis patients

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ABSTRACT:

Background: The present study was conducted to assess histopathological yield in bronchoscopic biopsies in tuberculosis patients. **Materials & Methods:** 24 patients in whom the diagnosis of TB was confirmed underwent biopsies from three sites transbronchial lung biopsy [TBLB], TBNA, and bronchial biopsy [BB]). **Results:** 23 patients had cough, 15 had fever and 17 had chest pain. The difference was non- significant (P> 0.05). 17 granulomas were seen in patients, the size of the granuloma was 5.2 mm and it was located in interstitium. **Conclusion:** Bronchoscopic findings showed widened carina and nodular mucosa in tuberculosis.

Key words: Bronchoscopic biopsies, Tuberculosis, transbronchial lung biopsy.

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INTRODUCTION

Tuberculosis (TB) is a major health problem in developing countries. Diagnosis of TB requires sputum testing with acid-fast bacilli (AFB) which has very low sensitivity and specificity. Other tests including Mantoux and Quantiferon are also nonspecific. AFB culture has been considered the gold standard test for the diagnosis of TB although takes a long time (average 6–8 weeks).[1]

Fibreoptic bronchoscopy (FOB) was developed in the late 1960s by S. Ikeda and has become the mainstay investigation in the evaluation of patients suspected of lung cancer.[2] It is employed mainly as a diagnostic tool providing tissue to determine the histological type of tumour. Bronchoscopy also has a role in disease staging and an extended role in delivering therapeutic modalities. FOB is convenient to perform, safe and well tolerated by the patient.[3]

Flexible bronchoscopy with transbronchial lung biopsy (TBLB) is a commonly used technique in pulmonary medicine for the diagnosis of a wide variety of diseases.[4] However, one of the limiting features of this technique is the small sample obtained using conventional forceps. Previous studies have suggested that larger forceps may improve diagnostic yield; however, as forceps become larger, there is greater concern about the development of complications, particularly bleeding, In recent years, larger forceps connected to an electrocautery system, named the 'hot forceps', were designed for use with flexible bronchoscopy.[5] With these forceps, heat energy is delivered after grasping the tissue to promote coagulation and reduce bleeding at the time of tissue collection.[6] The present study was conducted to assess histopathological yield in bronchoscopic biopsies in tuberculosis patients.

MATERIALS & METHODS

The present study was conducted in the department of general pathology. It comprised of 24 patients in whom the diagnosis of TB was confirmed by either bronchoalveolar lavage (BAL) fluid or transbronchial

needle aspirate (TBNA) culture. The study was approved from institutional ethical committee.
Data related to patients such as name, age, gender etc. was recorded. Clinical features such as cough and fever etc. was recorded. Biopsies from three sites transbronchial lung biopsy [TBLB], TBNA, and bronchial biopsy [BB]) was obtained. Bronchoscopy was done using olympus fiberoptic bronchoscope under sedation. Three biopsies were obtained for each patient TBLB. TBNA and BB 2–3 bits were obtained for each.
Histological examination was performed on formalin fixed paraffin embedded tissue sections. Histological stains used were hematoxylin and eosin for routine examination and Ziehl-Neelsen (ZN) stain for AFB. Each biopsy was examined for the presence of granulomas.
Results were assessed statistically. P value less than 0.05 was considered significant (P< 0.05).

RESULTS

Table I Distribution of patients

Total- 24		
Gender	**Males**	**Females**
Number	15	9

Table I shows that out of 24 cases, 15 were seen in males and 9 in females.

Table II Clinical features in patients

Clinical features	Number	P value
Cough	23	0.09
Fever	15	
Chest pain	17	

Table II, Graph I shows that 23 patients had cough, 15 had fever and 17 had chest pain. The difference was non-significant (P> 0.05).

Graph I Clinical features in patients

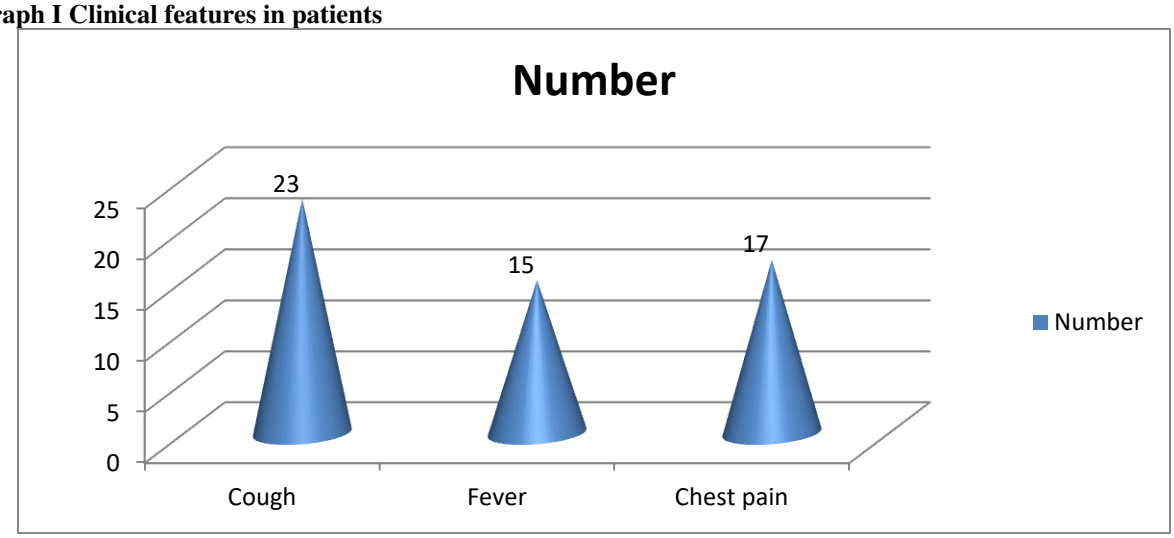

Table III Bronchoscopic findings

Findings	Number	P value
Widened carina	15	0.04
Nodular mucosa	9	

Table III shows that in 15 cases, widened carina and in 9 cases, nodular mucosa was seen. The difference was significant (P< 0.05).

Table IV Assessment of histological parameters

Parameters	Number
Granuloma number	17
Size	5.2 mm
Location	Interstitium

Table IV shows that 17 granulomas were seen in patients, the size of the granuloma was 5.2 mm and it was located in interstitium.

DISCUSSION

Mycobacterium tuberculosis is an ancient bacterium that was first presented as the cause of tuberculosis (TB) in 1882. Despite the global introduction of a vaccine and the discovery of an effective four-drug treatment regimen, M. tuberculosis still likely infects approximately one-quarter of the world's population and is the leading infectious cause of mortality worldwide.[7] The current TB pandemic is fueled not only by poverty and HIV/AIDS but also by an insufficient understanding of the spectrum of TB pathogenesis, which may be essential in developing new diagnostic tests and creating more-adaptable treatment regimens.[8]

Peripheral lesions are usually sampled with a combination of bronchial wash, brushes, transbronchial biopsy and TBNA. The diagnostic yield of bronchoscopy for peripheral lesions depends on a number of factors, including lesion size, the distance of the lesion from the hilum and on the relationship between the lesion and bronchus.[9] The yield of bronchoscopy for lesions ,3 cm varies from 14–50% compared with a diagnostic yield of 46–80% when the lesion is .3 cm. The presence of a bronchus sign on chest CT predicts a much higher yield of bronchoscopy for peripheral lung lesions. In these cases, fluoroscopic guidance should be used to ensure proper positioning of the diagnostic accessory.[10] The present study assessed histopathological yield in different types of bronchoscopic biopsies.

In present study, out of 24 cases, 15 were seen in males and 9 in females. We found that 23 patients had cough, 15 had fever and 17 had chest pain. Gupta et al conducted a study and patients with positive acid-fast *bacilli* (AFB) culture and with three bronchoscopic biopsies including TBLB, TBNA, and BB were included in the study. Gupta et al[11] conducted a study in which elected (14) histological parameters were evaluated retrospectively in a total of 27 biopsies from 9 patients with TB after hematoxylin-eosin and Ziehl-Neelsen staining. Diagnostic yield in TBLBs and TBNA was similar for granulomas detection (66.6% each). Granulomas in TBNA were larger, caseating and confluent as compared to small interstitial granulomas seen in TBLB. AFB was demonstrated in only one patient in TBNA. Lymphocytic cell cuffing was seen around most TBLB granulomas. One patient also showed microfilaria in blood vessel in TBLB. BBs in all patients showed the presence of goblet cell metaplasia and increased peribronchial plasma cell infiltrate with or without eosinophils may be indicative of chronic injury. The yield of granulomas was low in BBs seen in only 2 patients (22.2%).

We found that in 15 cases, widened carina and in 9 cases, nodular mucosa was seen. The difference was significant ($P< 0.05$). We observed that 17 granulomas were seen in patients, the size of the granuloma was 5.2 mm and it was located in interstitium. Symptoms of extrapulmonary TB can be variable and require a high degree of clinical suspicion. TB lymphadenitis is characterised by painless, progressive lymph node swelling (6). Cervical chain lymph nodes are the commonest site. Pleural TB may be asymptomatic but is often associated with the typical pulmonary symptoms of TB, including pleuritic chest pain. Central nervous system TB may manifest in the form of TB meningitis, tuberculomas or TB brain abscesses.[12]

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that bronchoscopic findings showed widened carina and nodular mucosa in tuberculosis.

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