

## A Study of Histomorphological Pattern of Pleural Biopsies at a Tertiary Care Centre of North India

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### Abstract

Biopsy of the pleura has been an important diagnostic tool since many years. It is performed on patients with undiagnosed exudative effusions, with non-diagnostic cytology, and a clinical suspicion of tuberculosis or malignancy. The present study was performed to assess efficacy of pleural biopsy in the diagnosis of various pathologies.

**Keywords:** Histopathology, Pleural biopsy, Pleural pathology

### Introduction

Pleural biopsy is a standard procedure for the investigation of pleural disease. Biopsy of the pleura was first described in 1955 by DeFrancis, *et al.* [1] They used Vim Silverman needle and since then it has been a very important diagnostic procedure. In an effort to obtain better yield of biopsy specimens many modifications of the original biopsy needle have been developed [2]. Cope and Abrams needles are most popular biopsy needles used these days and pleural biopsy has become a routine procedure [3]. The refinements provided by Abrams and Cope have simplified the technique and the procedure of obtaining pleural biopsy has become a customary practice now.

### Material and Methods

Present study was carried out on 100 pleural biopsies over a period of one year. Biopsies were performed for various indications including patients with undiagnosed pleural effusion, pleural thickening or pleural nodule on CT scan and cases with equivocal finding for malignancy on pleural fluid examination. This was a retrospective study and we studied the clinical details and reviewed the Hematoxylin and Eosin stained sections of all 50 cases. Special stains were used wherever needed.

### Results

Present study was carried out on 100 pleural biopsies over a period of one year out of which 80 were males and 20 were females with a male to female ratio of 4:1. Age of patients ranged from 20

- 80 years with mean age of 50 years. Majority of cases belonged to age group of 41-60 years.

78 of the pleural biopsies were adequate for opinion and contained enough tissue to reach a diagnosis. Out of the adequate biopsies 55 cases (73%) revealed benign lesions with predominance of inflammatory lesions whereas 23 cases (27%) were diagnosed as malignant comprising 13 cases of adenocarcinoma, 5 cases of squamous cell carcinoma, 2 cases of small cell carcinoma, 2 cases of poorly differentiated carcinoma and 1 case of mesothelioma. Out of 55 cases of benign lesions, 12 cases showed caseating granulomas and hence belonged to tubercular etiology.

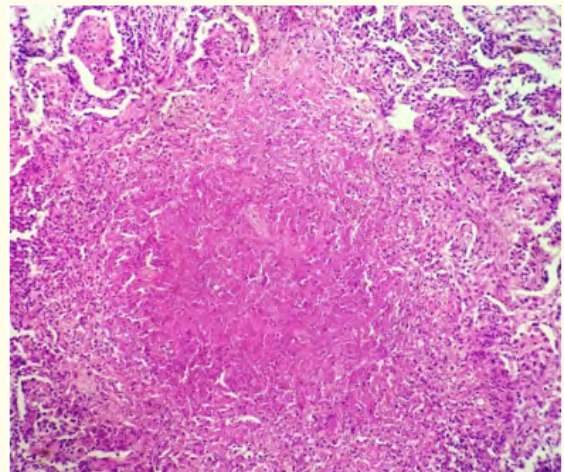
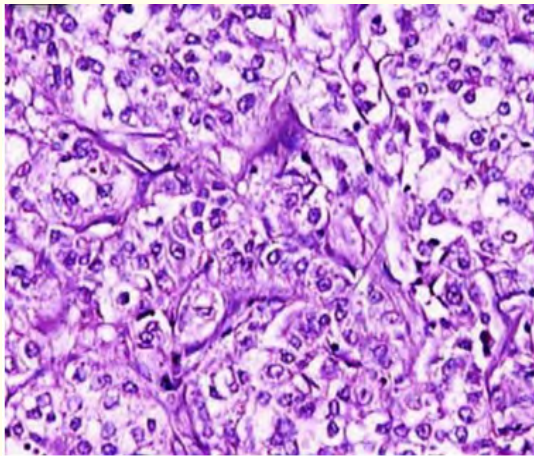
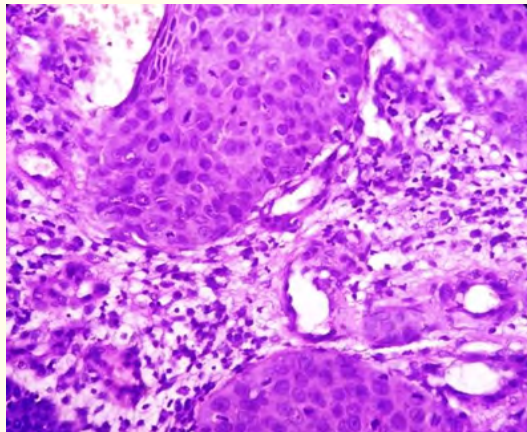


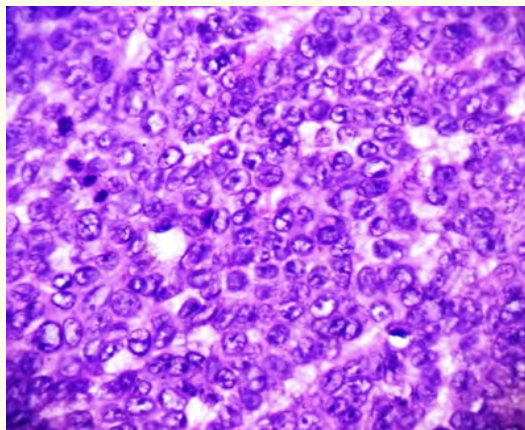
Figure 1: Necrotizing granuloma of Tuberculosis (HE;100x).



**Figure 2:** Adenocarcinoma (HE;400x).



**Figure 3:** Squamous cell carcinoma (HE;400x).



**Figure 4:** Poorly differentiated carcinoma (HE;400x).

Diagnosis	Number of cases
Adenocarcinoma	13
Squamous cell carcinoma	5
Small cell carcinoma	2
Poorly differentiated carcinoma	2
Mesothelioma	1
Tuberculosis	12
Other benign lesions	43
Inadequate	22

**Table 1:** Distribution of cases according to final diagnosis.

Diagnosis	Percentage of cases
Adenocarcinoma	17%
Squamous cell carcinoma	6%
Small cell carcinoma	3%
Poorly differentiated carcinoma	3%
Mesothelioma	1%
Tuberculosis	15%
Other benign lesions	55%

**Table 2:** Percentage distribution of adequate cases according to final diagnosis.

**Discussion**

Pleural biopsy is a standard procedure in the diagnosis of pleural diseases and has been an important diagnostic tool since many years. It is a very safe, cheap and easy method to obtain adequate histological specimen in cases of undiagnosed or equivocal cases of pleural fluid. Pleural biopsy has greatest value in the diagnosis of granulomatous and malignant diseases of the pleura. However primary malignancies of pleura are not as common as metastatic malignancies. Among metastatic malignancies adenocarcinoma is a more frequent metastatic malignancy as compared to squamous cell carcinoma. In cases of metastatic malignancies further immunohistochemistry can be used to know the primary site of malignancy. Most common sites from where malignancy metastasizes to pleura are lung, breast, ovary, stomach and lymphomas [4]. In malignant pleural effusions, the diagnostic value of pleural biopsy is less as compared to the pleural fluid cytology, with cytologic yields ranging from 40%-87% [5]. One author found a sensitivity of 44% for closed pleural biopsy, 62% for fluid cytology and 95% for thoracoscopy in diagnosing malignant pleural effusions [6]. The limited diagnostic value of pleural biopsy for malignancy can be attributed to the fact that seeding of parietal pleura by the tumor cells is mandatory for biopsy to be positive and the biopsy might have been taken from the unaffected sites [7].

It is well known that exfoliated mesothelial cells assume atypical and pleomorphic form [8]. Therefore many times it is difficult to differentiate them from malignancy in pleural fluid. Pleural biopsy is of great help in such cases as not only it helps to differentiate between mesothelial cells and malignant cells but also immunohistochemistry can be applied on tissue sections. In cases of inflammatory lesions special stains can be used to demonstrate specific causative organism like Acid Fast Bacilli in cases of tuberculosis and Periodic acid Schiff reagent for fungus. Tuberculosis is an important and common cause of pleural pathologies especially in developing countries like India. Pleural biopsy is helpful not only for histopathological examination but also for obtaining adequate material for microbiological examination and culture. There are no absolute contraindications for this procedure, bleeding diathesis is a relative contraindication and needs to be corrected before any invasive procedure [9,10]. With ongoing advances in biopsy needles it has now become a very safe procedure without any major complications.

### Conclusion

It was concluded from the study that inflammatory lesion was the commonest finding observed followed by malignant lesion and tuberculosis. Pleural biopsies are important in diagnosing pleural lesion which were earlier missed in other investigative procedures carried for detecting respiratory lesion.

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