

# Diagnostic Role Of Pleural Biopsy In Pleural Effusion

A M AKHTAR S RASUL K WAHEED A H BHATTI Z H IQBAL N ANWAR S WAHEED

Correspondence to: Abdul; Majeed Akhtar

Pleural effusion is a common clinical and diagnostic problem in Pakistan. The commonest cause of pleural effusion is presumed to be tuberculosis until proved otherwise. The objective of this study was to establish the diagnostic role of pleural biopsy in exudative pleural effusion. Fifty cases were selected who were clinically and radiologically diagnosed to have pleural effusion. Their age ranged between 20 to 80 years. Out of 50 cases 29 (58%) were diagnosed to be tuberculous, 11 (22%) were malignant, 5 (10%) were suffering from chronic non specific pleuritis while no diagnosis could be made in 5 (10%) cases. Only 3 (6%) patients developed pneumothorax which resolved on its own. Pleural biopsy is a safe and reliable procedure with fewer complications. It should be performed in all exudative pleural effusions to overcome the delay in the diagnosis of tuberculosis and malignancy.

**Key words:** Pleural biopsy, pleural effusion, exudative effusion, tuberculosis, malignancy

Exudative pleural effusion is a common clinical and diagnostic problem in Pakistan. It is very difficult to diagnose the underlying aetiology only by clinical, radiological or even with pleural fluid analysis, These cases usually require histopathology of pleural biopsy for definitive diagnosis<sup>1</sup>. The two common causes of exudative pleural effusion are malignancy and tuberculosis<sup>2,3</sup>

The Abram's pleural biopsy needle was introduced in 1950<sup>4,5</sup>. Pleural biopsy is widely used as a diagnostic tool for pleural effusion. A number of studies have revalidated the significance of pleural biopsy in the diagnosis of plural effusion<sup>6,7</sup>. The present study has been conducted to evaluate the diagnostic yield of exudative pleural effusion.

## Materials & Methods

This was a prospective study conducted at the Institute of Chest Medicine Mayo Hospital Lahore. A total of 50 hospitalized patients ranging in age from 20 to 80 years were included in this study. Out of these 50 patients, 15 were females and 35 were males (Table 1). All the patients were admitted with the objective to evaluate the diagnostic yield of percutaneous pleural biopsy and subsequent management.

Table 1 Sex Distribution

Sex	n=	%age
Male	35	70%
Female	15	30%
Total	50	100%

The pleural fluid was analysed grossly for proteins. The exudative pleural effusion of the patients with pleural fluid proteins more than 3 gm/dl were selected.

The closed pleural biopsy was performed using Abram's needle. The biopsy site was selected on the basis of area of maximum dullness to percussion and degree of density on chest radiograph. The chest wall over the selected area was infiltrated with local anaesthesia.

A small skin nick was given and Abram's needle was advanced in to the pleural space. Once in the pleural space the cutting edge was opened and fluid was aspirated, the biopsy needle was then withdrawn slowly, maintaining pressure in direction of the cutting edge until the parietal pleura was engaged, the needle was closed. A minimum of 4 to 5 biopsy specimens in one setting from a single site was obtained.

## Results

A total of fifty patients with exudative pleural effusion were biopsied. Out of 50 cases 35 (70%) were males and 15 (30%) were females with age range from 20-80 years. In the present study out of 50 cases, 29 (58%) were diagnosed tuberculous and 11 (22%) had malignancy, 5 (10%) showed non-specific pleuritis and 5 (10%) could not be diagnosed. An overall diagnostic yield of closed pleural biopsy was 80% (Table II).

Table II Histopathological Results

Diagnosis	n=	%age
Tuberculosis	29	58%
Malignancy	11	22%
Ch Non Specific	5	10%
No Diagnosis	5	10%
Total	50	100%

## Discussion

There are multiple causes of pleural effusion. These are broadly divided into transudative and exudative pleural effusion. The present study was limited to only exudative pleural effusions and the aim of the study was to evaluate diagnostic yield of pleural biopsy with Abram's pleural biopsy needle. A review of 1893 pleural biopsies had shown the diagnostic yield of 51% for malignancy and 75% for tuberculosis<sup>5</sup>. A majority of the investigators had performed pleural biopsy in the presence of pleural fluid, Niden and Associates had demonstrated the feasibility and safety of percutaneous pleural biopsy in the absence of



pleural fluid<sup>8</sup>. The present study conducted in the presence of pleural effusion and an overall diagnostic yield of 80% was obtained.

The complications of pleural biopsy are rare if performed in expert hands. The common complications being pain at the site of biopsy, subcutaneous emphysema, pneumothorax and subcutaneous fluid accumulation<sup>9</sup>. Seeding of tumor cells may follow pleural biopsy, specially if performed in the presence of mesothelioma<sup>10,11</sup>.

In the present study pain at the site of biopsy was observed in 17 cases (34%), 3 (6%) patients developed pneumothorax and localized fluid accumulation in subcutaneous tissue was seen in 4 (8%) patients.

Table III Complications of Pleural Biopsy

Complications	n=	%age
Site pain	17	34
Pneumothorax	3	6
Fluid	4	8

### Conclusion

Pleural biopsy with Abram's pleural biopsy needle is a safe procedure with diagnostic yield of 80% in exudative pleural effusion. Complications are very few, which usually resolve on their own. An early diagnosis of tuberculosis and malignancy can be made by pleural biopsy. Almost all the cases with exudative pleural

effusion with no other clue to the diagnosis must undergo pleural biopsy at the earliest.

### References

1. Arshad J.S. Nasir Shah, Abdul Samad, M. Amjad & Zahoor Ullah, JPMI, 1996, volume 10, No. 2: 147-153.
2. Abram's L.D. A pleural biopsy punch Lancet, 1958, 1:30-31.
3. Fayyaz Hussain, Shazia Mujahid, Javaid AK. Diagnostic evaluation of pleural effusion and role of needle pleural biopsy. J. Pak. Med. Assoc. 1995; 45:127.
4. Cope C. New pleural biopsy needle. Preliminary study. J.A.M.A. 1958; 167:1108.
5. Tomlison SR, Sban SA, Invasive procedures in the diagnosis of pleural disease. Semin Resp Med. 1987;9:30.
6. Salyer WR, Eggleston JC, Erozen YS, Efficacy of pleural needle biopsy and pleural fluid cytopathology in the diagnosis of malignant neoplasm involving pleura chest 1975;67:536.
7. Raja G.Ogirala, Vinita Agarwal, Comparison of the Raja and the Abram's pleural effusion. Am. Rev. Respir. Dis. 1993; 147:1291.
8. Niden Ahh, Burrows B, Kasik JE, et al: percutaneous pleural biopsy with a curretting needle. Amer Rev. Resp. Dis. 84:37-41, 1961.
9. Chretien J, Daniel CL Needle pleural biopsy in Chretien J, Bignonj< Hirsch A eds. Thepleural in health and disease. New York; Mareel Dekker, 1985;631
10. Schacter EN, Basta W. Subcutaneous metastasis of an adenocarcinoma following a percutaneous pleural biopsy Am. Rev. Respir. Dis. 1973; 107:283.
11. Elmes PC, Simpson MJC. The clinical aspects of mesothelioma Q.J. Med. 1976; 45:427.