

Efficacy and safety of pleural biopsy in aetiological diagnosis of pleural effusion

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Citation

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Abstract

Study Objective: To find out the efficacy and safety of pleural biopsy in aetiological diagnosis of pleural effusion

Design: A prospective study. The efficacy and safety of pleural biopsy was studied in 50 patients of pleural effusion.

Setting: Out and In patients service of department of Tuberculosis & Chest Diseases, MLN Medical college Allahabad.

Patients: 50 patients who were above the age of 12 years were studied. Total no. of male patients was 34 and female were 16.

Results: Pleural biopsy made diagnosis of TB in 19 patients (out of 41 patients of tuberculosis), malignancy in 4 (out of 8), chronic non specific pleuritis in 20, inadequate pleura in 5, acute pleuritis in 1 and no pleura in 1 patient. None of the patient developed any major complication.

Conclusion: Pleural biopsy is 46% sensitive and 100% specific for tuberculosis in one bite. Yield can be increased if more bites are obtained. Similarly sensitivity and specificity for malignancy is 50% and 100%. And pleural biopsy is 100% safe procedure.

INTRODUCTION

Pleural effusion is a common chest problem, yet it is difficult to establish the aetiological diagnosis in as many as 20% cases, in spite of good history, thorough clinical, radiological and full examination of aspirated fluid. Prior to introduction of pleural biopsy the diagnosis of the cause of pleural effusion was more or less empirical. Closed pleural biopsy is a safe and simple alternative to open pleural biopsy¹. Its utility in the diagnosis of pleural diseases has been the subject of many extensive reports¹⁻⁹. Despite of its worldwide acceptance and the widespread availability this investigation is not being used widely in India. We are reporting fifty cases in which this procedure formed an important part of the diagnostic evaluation, confirming both its usefulness and safety in the work up of patients of pleural effusion.

MATERIAL & METHOD

PATIENTS SELECTION

Consecutive 50 patients of pleural effusion were studied, who were more than 12 years of age, irrespective of sex with no other systemic diseases. All patients underwent preliminary investigations as indicated by their clinical presentation, including haematological, radiological, bacteriological and biochemical.

BIOPSY PROCEDURE

Pleural biopsy was done with Abraham's punch biopsy using standardizing technique¹⁰ with the variation that only one bite was taken instead of multiple bites. A chest skiagram was obtained in each case 4-6 hour after biopsy procedure, to identify the pneumothorax. All tissue obtained after biopsy were fixed in formalin and haematoxyline eosin (H & E) stained were prepared after taking thin section of the tissue.

CRITERIA FOR HISTOLOGICAL DIAGNOSIS

1. Tuberculosis inflammation: The section shows collection of epithelioid cells with or without caseation, surrounded by lymphocytes and giant cells of langhans type.
2. Suggestive of tuberculosis inflammation: There is collection of epithelioid cells, without presence of giant cells of langhans type.
3. Chronic nonspecific inflammation: The section shows presence of chronic inflammatory cells e.g. lymphocytes, plasma cells and eosinophils with evidence of fibrosis.
4. Acute inflammation: The section shows fibrous inflammatory exudates with infiltration of

polymorphonuclear cells.

5. Malignancy: The presence of groups of cells showing hyperchromatism and anaplasia is confirming of malignant infiltration of pleura.
6. Fibrosis: The pleura show fibroblastic proliferation with collagenisation and occasional inflammatory cells.
7. Normal pleura: consists of a membrane composed of loose or dense connective tissue contiguous to muscle lined by mesothelial cells.
8. Inadequate: The biopsy was labeled inadequate where the tissue shows fibro muscular or fibro fatty tissue only

RESULTS

50 patients above the age of 12 years were studied. Male were 34 and female were 16. Satisfactory tissue was obtained in 44 (88%) patients, 5 biopsy showed inadequate tissue while one patients showed no pleura. Of the 44 patients successfully biopsy, a definitive histopathological diagnosis was made in 24 (54.5%); 20 patients in addition has diagnosis of non specific inflammation. Details of pleural biopsy are listed in table 1.

Figure 1

Table 1: showing pleural biopsy finding

Final Diagnosis	No. of cases
Tuberculosis	19
Malignancy	04
Chronic nonspecific inflammation	20
Acute pleuritis	01
Inadequate	05
No pleura	01
Total	50

None of our patients developed pneumothorax following biopsy. No patients have significant bleeding. 42 patients complained of chest pain at site of biopsy.

DISCUSSION

Since its original description in 1958 the technique of pleural biopsy has been adopted with no significant difference of safety and acceptable yield¹⁰. All reports are unanimous on its utility and safety. Critical patients have been evaluated without mishap. The diagnostic success rate has been reported to vary from 30% to 100% for different diseases with multiple bites^{2, 3,5,7,8}. Our results are comparable to almost all previous studies. The factors which determine success include the number of samples taken² and diffuseness of lesion in pleura. The safety of procedure has been emphasized. Common complications which are reported in the literature are pain at local site, bleeding and pneumothorax etc. The relative ease of performance, the obvious advantage over open biopsy and lack of any significant complication should prompt its more frequent use in Indian centers.

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