Diagnostic Outcome of Open Pleural Biopsy

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Significance:
To diagnose pleural disease different biopsy techniques are available. Open pleural biopsy is used when a larger piece of tissue is required. Abnormal tissue growth is due to a virus, fungus, or parasite mesothelioma tuberculosis. Open Pleural biopsy is specified to improve the diagnosis of recurrent pleural effusion specifically when pleural carcinomatosis and tuberculosis is suspected

ABSTRACT

Background: Pleural diseases involve the parietal and visceral pleura. They can be of inflammatory or malignant origin. Pleural biopsy is advised for assessment and excluding infectious causes as tuberculosis or malignant disease, particularly malignant mesothelioma. Connective tissue disorders such as rheumatoid disease can also present with involvement of pleura, requiring pleural biopsy for diagnosis.

Objectives: The aim of my study was to find out diagnostic outcomes of open pleural biopsy or differentiation between benign (noncancerous) and malignant (cancerous) disease, to diagnose viral, fungal, and parasitic diseases of pleura.

Materials and Methods: Non-random sampling was used for data collection from Gulab Devi hospital. To find out the clinical value of nonspecific pleural biopsy specimen and fluid malignant neoplasm and tuberculosis. Data was collected from the patients undergoing procedure at Gulab Devi hospital. The collected data consists of 160 patients included females and males of all age groups.

Results: 160 patients were undergone biopsies. Out of 160 patients a nonspecific or normal result was found in 53(33.3%). Diagnostic of malignant neoplasm in 18(10.9%) and granulomatous disease in 28(17%). Tuberculosis was found in 46 (28.9%). Histopathologically, pneumonitis was found in 16 (10.1%).

Conclusion: Open pleural biopsy is precise and gold standard investigative method for malignancy. Pleural biopsy is safe easily performed and useful in diagnoses of tuberculosis or malignancy.

Introduction

The pleural biopsy is an investigative procedure in which membrane sample lining chest cavity (pleura) is obtained for examination. Pleura are a large, thin sheet of tissue that wraps around the lungs and lining inside chest cavity. Pleura layers have thin space filled with a small amount of fluid. (1)

The fluid helps the surfaces of parietal and visceral pleurae easily glide over each other during respiration. (2) The pleura is divided into parietal and visceral. The visceral layer is directly attached with lungs. The parietal layer is attached to thoracic cavity. The space between two layers is known as the intrapleural space. (3) The two pleural layers are separated by elasticity of the thoracic wall. (4)

The pleura is visible when there is abnormality. Pleural abnormalities can be subtle and it is important to check carefully around the edge of each lung where pleural abnormalities are usually more easily seen. (5)

Pleural diseases may be of either inflammatory or malignant origin frequently subsequent to pleural effusions. Pleural biopsy is required to reveal the cause of pleural effusion. The diagnostic procedures of pleural effusion include chemical, microbiological and cytological examination. Pleural biopsy is suggested for excluding infectious causes as tuberculosis and malignant disease particularly malignant mesothelioma. (6)

To diagnose pleural disease different biopsy techniques are available. There are three types of pleural biopsies such as closed open and thoracoscopic. In thoracoscopic biopsy endoscope is inserted to pleural cavity. Many diseases accumulate fluid in pleural space. (7) Risk increases with stress, obesity, smoking, chronic illness and the use of some medications (such as insulin, tranquilizers, and antihypertensive). (8)

Open pleural biopsy is used when a larger piece of tissue is required. Abnormal tissue growth is due to a virus, fungus, or parasite mesothelioma tuberculosis. (9) Open Pleural biopsy is specified to improve the diagnosis of recurrent pleural effusion specifically when pleural carcinomatosis and tuberculosis is suspected. (10)

This study was aimed to find out diagnostic outcome of open pleural biopsy performed at surgery department of hospital and histopathology was done for diagnostic purpose. The data was collected and analyzed to know diagnostic outcome of open pleural biopsy.

Materials and Methods

Settings: The data was collected from chest post-operative ward in Gulab Devi Hospital and study was completed at Gulab Devi Postgraduate Medical institute, Lahore

Study design: It was Cross sectional study design.

Duration of study: The study was completed in 5months from October 2015 to January 2016.

Sample size: We included 160 patients of open pleural biopsy.

Inclusion criteria: Patients in chest post-operative ward at Gulab Devi Hospital Lahore with open thoracotomy whom pleural samples were sent to histopathology lab for diagnosis were included in my study.

Exclusion criteria: Patient with close biopsy and/or open thoracotomy but samples were not sent for histopathology analysis.

Methodology: To determine diagnostic value of nonspecific pleural biopsy specimen in malignant neoplasm and tuberculosis data was collected from patients undergoing the procedure at Gulab Devi Hospital. The data collected consists of 160 patients both females and males of all age groups with different socioeconomic status. The data was collected within the duration of five months of all the registered cases. The data was collected with permission of concerned department and after approval of ethical committee on specially designed Performa. The data collected consist of the age and gender of patient, clinical appearance, and pleural diagnostic outcome. The data was collected and statistically analyzed.

Statistical Analysis: The statistical analyses were done in statistical package for social sciences (SPSS) version 16.0. Data was combined to perform analysis; categorical data are presented as percentage in graphs while descriptive frequency distribution was used for quantitative data.

Results

The patients mean age (year) with open pleural biopsy was 26.83±13.263.The male were 102 (63.75%) and female were (36.25%) with different age groups with mean age of 26.83±13.263 with maximum age of 70 and minimum of 8 years.

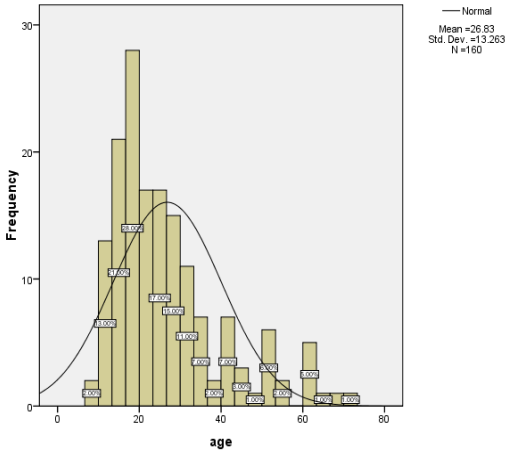

Figure 1; Descriptive statistics of age/years

Table 2.; Descriptive statistics of clinical manifestation of patients

	Total	Yes	No
Fever	160	129(80.65%)	31(19.35%)
Cough	160	143 (89.37%)	16(10.63%)
SOB	160	83(52.2%)	77(48.125%)
Pain	160	81(50.4%)	79(49.37%)
Weight loss	160	127(79.9%)	33(20.62%)

Out of 160 patients the 129 (80.65%) presented with fever, 143 (89.37%) with cough, 83 (52.2%) with SOB, 81 (50.4%) with pain and 127 (79.9%) presented with weight loss.

Out of 160 patients with undergoing the open pleural biopsy 46 (28.9%) with tuberculosis, 28 (17%) with granuloma lesion, 16 (10.1%) with pneumonitis, 18 (10.7%) with malignancy and 53 (33.3%) were diagnosed.

The descriptive statisctics of diagnostic outcome of patients undergoing diagnostic procedure is shown in Fig 2.

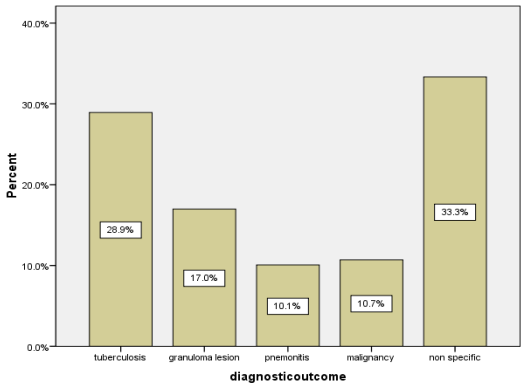

Figure 2; Descriptive statistics of diagnostic outcomes

Discussion

The pleura membrane is lining of lungs and chest cavity. The pleural biopsy is removal of pleural tissue for examination. Pleural biopsy is used to differentiate between benign and malignant disease. Majority of patients in this study were 20 to 30 years old or more. In current study, 71.4% of histopathologically proven tubercular pleural biopsy cases presented with chest pain, dry cough, breathlessness, and fever. It was observed breathlessness is the commonest symptom (30%) in cases of malignancy but our study reveals fever and cough to be the commonest symptoms (89.2%) followed by breathlessness and chest pain (61.5%). In our study, there was 28.9% and 10.7% cases of diagnosed tuberculosis and malignancy respectively. (11)

In pleural biopsy report, there was 5.6% cases with granuloma lesion but in this study 17% were diagnosed with granuloma lesion and 17.1 % diagnosed with pneumonitis. (12)

In another study of pleural biopsy established the cause of pleural effusion as malignancy and tuberculosis was in 22.4% and 31.1% cases respectively. In our study there was 46%with tubercular and 18% malignant histopathologically. When related with other studies, higher percentage tubercular and lower percentage of malignancy cases found in our study. (13)

The study of adequate tissue was done in 207 patients. Initially malignant neoplasm was diagnosed in 54 patients and granulomatous disease in ten. But in our study malignancy was diagnosed in 17 (10.7%) patients and granuloma in 28 (17%) patients. In

another study non-specific results were seen in 143 (68%). Malignant neoplasm and tuberculosis were eventually established in 30 excluded in 101 out of 143 patients. One false-positive result occurred in patient with nontuberculous granulomatous pleuritis. A definite diagnosis of tuberculosis and malignancy can be obtained by pleural biopsy.

Conclusion

Open pleural biopsy is precise and can be considered as gold standard investigative method for MPM. It is less sensitive for determining histologic subclass, particularly with nonepithelial subtypes. When thoracoscope is not available, pleural biopsy give definite diagnosis in significant cases of pleural effusion.

Conflict of interest: Authors do not have any conflict of interest to declare.
Disclosure: None
Human/Animal Rights: No human or animal rights are violated during this study.

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