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Original Research Article

Histopathological Study of Pleural Lesions

K Florence Nightingale[1], Audi Thanmayee Naidu[2], Rasheed Fatima[3]

[1]Associate Professor [2]Postgraduate [3]Associate Professor, Department of Pathology, SVS Medical College and Hospital, Yenugonda Mahabubnagar, Telangana 509001, India.

Corresponding Author:
Rasheed Fatima, Associate Professor, Department of Pathology, SVS Medical College and Hospital, Yenugonda, Mahabubnagar, Telangana 509001

E-mail: drrasheedfatima786@gmail.com

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Abstract

Introduction: Pleural diseases involve the parietal and visceral pleura and may be of either inflammatory or malignant origin. Pleural biopsy is recommended for the evaluation of inflammatory, infectious etiologies and malignant diseases. Inflammation can be caused by various conditions such as pneumonia, collagen vascular disorders, drug reactions. Pleural metastasis from pulmonary and extra pulmonary malignancies are common whereas primary tumors of the pleura constitute a relatively rare group of benign and malignant neoplasms. Aim of the study is to identify the incidence of neoplastic and non neoplastic lesions of pleura with focus on immunohistochemistry (IHC). To study the age and gender distribution of pleural lesions. *Methods:* Two years retrospective study was done from August 2015 to July 2017 at SVS Medical College and Hospital, Mahabubnagar on 70 pleural biopsies sent to the department of pathology. *Results:* Out of the seventy cases, fifty were inflammatory lesions and twenty were malignancies. Out of the malignant lesions primary pleural malignancies were three cases and the remaining seventeen cases were metastatic deposits to the pleura.

Keywords: Pleural Malignancies; Immunohistochemistry.

Introduction

Pleural diseases involve the parietal and visceral pleura and may be of either inflammatory or malignant origin. Pleural biopsy is recommended for the evaluation of inflammatory, infectious etiologies and malignant diseases. Inflammatory diseases of the lung may spread to the pleura, the pulmonary lesion may completely resolve but leave a pleural symphysis [1]. Fibrinous pleuritis can be caused by various conditions such as pneumonia, collagen vascular disorders, drug reactions, cancer [2]. Pleural metastasis from pulmonary and extra pulmonary malignancies are common whereas primary tumors of the pleura constitute a relatively rare group of benign and malignant neoplasms [3]. Current study designed to identify the incidence of neoplastic and non neoplastic lesions of pleura with focus on IHC.

Materials and Methods

Two years retrospective study was done on 70 thoracoscopy guided pleural biopsies sent to the department of pathology SVS Medical college, Mahabubnagar. Processed tissue sections stained with haematoxylin and eosin were analysed. Immunohistochemistry was done.

Results

A total of 70 patients were included in this study. Out of 70 patients 44 were males and 26 were females with a M:F of 1.69:1, most cases being in the age group of 41-60years (Table 1) (Table 2). 50 patients had non neoplastic lesions which included nonspecific inflammatory lesions and granulomatous lesions and 20 patients had

Table 1: Gender Distribution

Gender	No of Cases	Percentage
Males	44	63%
Females	26	37%

Table 2: Age Distribution of Cases

Age Groups	No of Cases	Percentage
0-20years	02	2.8%
21-40years	22	31.4%
41-60years	29	41.4%
61-80years	17	24.4%

Table 3: Histological Diagnosis of Pleural Biopsies

Diagnosis	No of Case(%)
Non Neoplastic	50(71.5%)
Non Specific Inflammation	40
Granulomatous Lesions	10
Neo Plastic	20(28.5%)
Metastatic Deposits	17
Primary Malignancies	03

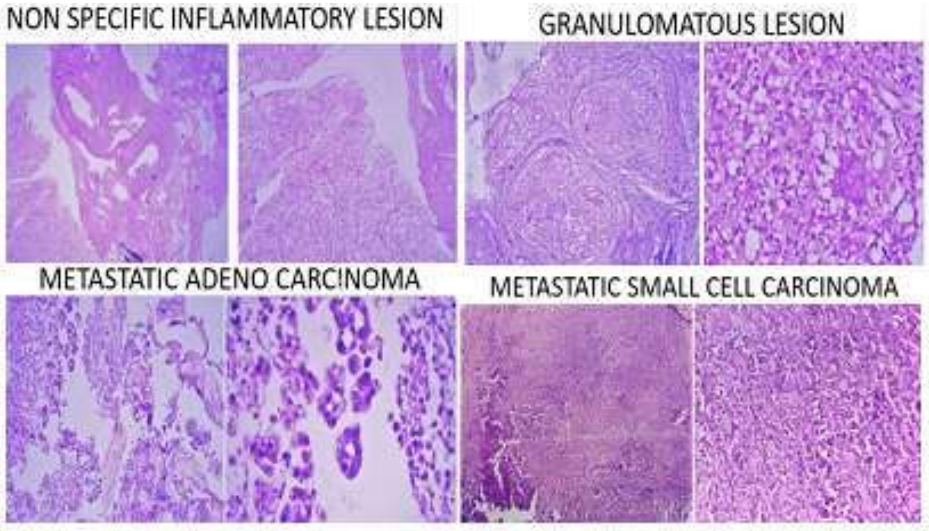

Fig. 1: Nonspecific inflammatory lesion.(100x & 400x), Granulomatous lesion (100x & 400x), Metastatic adenocarcinoma (100x & 400x), Metastatic small cell carcinoma(100x & 400x).

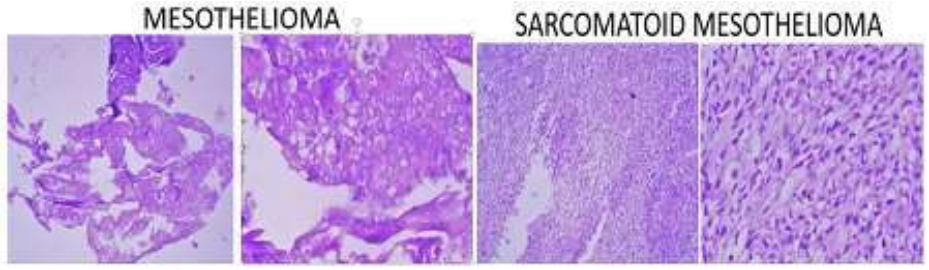

Fig. 2: Mesothelioma..(100x & 400x), and Sarcomatoid mesothelioma (100x & 400x).

malignant lesions including primary mesotheliomas (3 cases) and secondary deposits (17 cases), 15 cases were diagnosed as adenocarcinoma deposits and 2 were small cell carcinoma deposits on H & E stained smears (Table 3)(Figure 1).

All three cases of malignant mesothelioma immunostained for calretinin showed strong nuclear and cytoplasmic positivity (Figure 2).

All cases of adenocarcinoma immunostained with CEA showed strong positivity. The two cases of small cell carcinoma secondary deposits stained with CD56 showed strong cytoplasmic positivity.

Discussion

In the present study a total number of 70 cases were studied over a period of 2 years. The pattern of these cases varied from non neoplastic lesions such as nonspecific inflammation and granulomatous lesions to neoplastic lesions including primary mesotheliomas and secondary deposits in the pleura (Figure 1 and 2).

In our study M:F ratio is 1.69:1 similar to the study of Pandit, et al. [4] and in contrast to Sakuraba, et al. [5]. Majority of the patients were aged between 41 to 60 years where as it was more than 60 years in the study of Pandit, et al. [4]. In the present study the most common lesion was nonspecific inflammatory lesion, which comprised of about 57% of all the pleural biopsies is similar to the study of Poe, et al. [7] who observed this lesion in 60% of the cases and in contrast to the study of Pandit, et al. [4] who diagnosed it only in 25% of the cases.

In the present study neoplastic lesions comprised of 28.5% which was the second most common lesion similar to the studies of Sakuraba, et al. [5] and Poe, et al. [7], but is in contrast to the studies of Pandit, et al. [4] and Scerbo, et al. [6] where neoplastic lesions were most commonly diagnosed. Among the neoplastic lesions secondary deposits in the pleura were seen in majority of the cases in our study (17 out of 20 malignancies reported were direct spread or secondary deposits) which is similar to the study of Sakuraba, et al. [5] which showed 27 out of 37 malignancies as either direct spread from the lung or secondary deposits in the pleura and Robert, et al. [7] who diagnosed 51 out of 54 malignancies as spread to the pleura or deposits. Among the secondary deposits in our study 15 cases were adenocarcinomas and 2 cases were small cell carcinomas. Granulomatous lesions were the second most common disorders in Pandit, et al. [4] and Scerbo, et al. [6] comprising 28% and 30% of all the lesions respectively where as in our study they were the least predominant lesions similar to Sakuraba, et al. [5] and Poe, et al. [7] comprising of 14.5%, 23% and 4.7% respectively.

The sensitivity of calretinin varies in the range of 73-100%. Both the nuclear and cytoplasmic compartments of malignant mesothelioma typically stain with calretinin, although nuclear staining is considered far more specific. The Wilms tumour gene 1 protein (WT1) shows nuclear staining in about 80% of malignant mesothelioma.

Monoclonal CEA serves the dual function of being a reliable negative marker for malignant mesothelioma and a positive marker in most pulmonary adenocarcinoma [8]. CD56 is useful in the diagnosis of small cell lung carcinoma even in biopsies with extensive crush artefact [9].

Conclusion

Thoracoscopy guided pleural biopsy is a good diagnostic procedure to evaluate undiagnosed pleural lesions.This procedure is safe and well tolerated. The use of immunohistochemistry as an aid to H & E provides accurate diagnosis in malignant cases. Proper case selection will improve the diagnostic utility of the procedure.

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