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CASE REPORT

ASBESTOS EXPOSURE AND SARCOMATOID MALIGNANT PLEURAL MESOTHELIOMA

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ABSTRACT: Malignant pleural mesothelioma (MPM) is commonly associated with documented asbestos exposure. The mean interval between exposure and death is around 40 years. Sarcomatoid mesothelioma is the least common form of MPM. It is more aggressive and associated with worst prognosis. Adequate sampling is important for accurate diagnosis. Both VATS and image guided core needle biopsy have higher diagnostic yield compared to the closed pleural biopsy. IHC markers are used as an adjunct to tumour histopathology. The primary treatment options for sarcomatoid type are surgery, chemotherapy and radiotherapy. Median survival for patients with sarcomatoid tumours is typically less than six months. Patients in whom the diagnosis is made early have a survival benefit from multimodality therapeutic approach.

KEYWORDS: Asbestos, sarcomatoid mesothelioma, immunohistochemistry.

INTRODUCTION: Diffuse Malignant pleural mesothelioma is a rare and the most common primary tumour of pleura usually resulting from Asbestos exposure. It represents <1% of all cancers & is unfortunately associated with many diagnostic difficulties. Extremely long latency from time of initial Asbestos exposure to tumour development and lack of effective modes of therapy are barriers to eradicating the disease. Histologically malignant pleural mesotheliomas (MPM) are classified as epithelial (50%), sarcomatoid (15%) & biphasic (35%). Primary distinctions are to be made between epithelial form of malignant mesothelioma and metastatic adenocarcinoma and also between sarcomatoid mesothelioma and sarcomas, metastatic sarcomatoid carcinomas & fibroma of pleura.

Adequate tissue sampling is important to permit accurate diagnosis. Effective treatment is limited for most patients with malignant mesothelioma. Without treatment the median survival is between 4 and 13 months. Patients in whom the diagnosis is made early have a survival benefit from a multimodality therapeutic approach. We report a case of 65 years old male with a history of chronic asbestos exposure who presented with left massive hemorrhagic pleural effusion which proved to be due to sarcomatoid type of malignant pleural mesothelioma (rare subtype).

CASE REPORT: A 65 year old male patient who worked as a labourer in Hindhustan shipyard limited, Visakhapatnam for more than 20 years presented with left non pleuritic chest pain, progressive breathlessness and cough for 2 months. His dyspnea was initially associated with vigorous exertion, but within one month, it progressed to grade IV. He had no fever or hemoptysis. He had anorexia and loss of weight. Prior to our hospital admission he underwent diagnostic & therapeutic thoracocentesis several times in private hospitals.

On physical examination, the patient appeared chronically ill, bed ridden, requiring oxygen support. His systolic blood pressure was 110 mmHg and diastolic blood pressure 80mmHg. Pulse rate 89/min and the respiratory rate 23/min. His trachea was deviated to right side and he had restricted

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chest wall movement on the left side. He had decreased breath sounds on left side and dullness on percussion was observed on left side.

INVESTIGATIONS: Routine blood investigations were normal. Chest X-ray PA view revealed left massive pleural effusion with shift of mediastinum to opposite side.

Pleural Fluid Analysis: shows lymphocytic predominant exudative hemorrhagic pleural effusion with ADA 40u/lit. Pleural fluid for smear & cell block were negative for malignant cytology. U/S abdomen – normal.

CECT Thorax: (Fig. 1a & 1b) showed massive pleural effusion on left side with shift of mediastinum to opposite side & gross irregularly lobulated thickened pleura with maximum thickness of 28mm along chest wall, mediastinum and bilateral parietal pleural calcification & minimal effusion on right side. Minimal fluid at the sub diaphragmatic aspect on either side within abdomen.

The CT features were highly suggestive of chronic Asbestos exposure and malignant pleural mesothelioma.

Because of his poor general condition, bedside closed pleural biopsy was done with Abram's needle. It was followed by tube thoracostomy.

Histopathological examination of the biopsy sample (Fig. 2) showed spindle shaped cells arranged in a haphazard pattern with plump and enlarged, elongated nuclei. Multi nucleation with atypia and mitotic figures were present. These features suggest the diagnosis of sarcomatoid (fibrous) type malignant mesothelioma.

Immunohistochemical (IHC) markers Cytokeratin & calretinin were negative. Following the results, final diagnosis of sarcomatoid type of diffuse malignant pleural mesothelioma of stage 1V (IMIG system) was made. Palliative pleurodesis with talc slurry and prophylactic radiotherapy to biopsy site were planned but due to the advanced stage of the disease and aggressive nature of this variety of MPM, his clinical course rapidly deteriorated and he died due to respiratory failure.

DISCUSSION: MPM is almost exclusively a man-made disease. About 80% of MPM are associated with documented Asbestos exposure[1]. Asbestos (hydrated magnesium silicate mineral) is closely linked with epidemiology of MPM. The mean latent interval between exposure and death is around 40 years.[2] Sarcomatoid mesothelioma(SM) is least common form of MPM. It is also called as diffuse malignant fibrous mesothelioma or spindled mesothelioma. It is more aggressive type and associated with worst prognosis.[3]

Distal metastasis is common in SM type. Diagnosis of this cell type is difficult because these tumours tend to mimic other benign and malignant conditions in appearance. Both VATS or image guided core needle biopsy have higher diagnostic yield compared to the closed pleural biopsy. IHC is used as an adjuant to tumour histopathology. Common markers like PCK, CK5/6, CALRETININ, WT1 are used to distinguish between epithelial type of mesothelioma from lung adenocarcinoma. It is not uncommon for a SM type to be CK negative as in this patient.[4]

Calretinin is positive in more than 90% of EM & variably positive in SM (30-60). It is suggested that some MPM lose keratin and calretinin expression as they become more undiffentiated.[5]

As with other cell types, treatment for sarcomatoid mesothelioma depends on the stage and location of the cancer. The present case was diagnosed as stage IV (IMIG) sarcomatoid MPM.[4]

The primary treatment options for this cell type are surgery, chemotherapy and radiation therapy. Sarcomatous cells have proven to be more resistant to treatment than other types of mesotheliomas. Surgery in particular can be difficult because sarcomatoid tumours are very rigid and often metastazise to the chest wall, making them difficult to remove. Doublet therapy with cisplatin in combination with Pemetrexed or Ralitrexed is considered as first line therapy for MPM.[6]

The median survival for patients with sarcomatoid tumours is typically less than six months, but some patients have been known to survive longer depending on the prognostic factors.[4] Our patient had many poor prognostic indicators such as sarcomatoid histology, age of 65 years, poor performance status & male gender. Soon after the diagnosis he had a rapid downhill course and died due to respiratory failure.

CONCLUSION: Mesothelioma incidence rates are expected to escalate in third world countries because of continuous industrial & household use of Asbestos. Since the disease has a long latent period of 20-40 years from exposure, periodic monitoring of the workers exposed to Asbestos is necessary for early detection of the malignancy or Asbestos lung disease so that timely intervention will improve prognosis.

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Fig. 1a: Axial CECT chest in soft tissue window showing left side nodular pleura with circumferential thickening and right pleural plaque with calcification and minimal right pleural effusion.

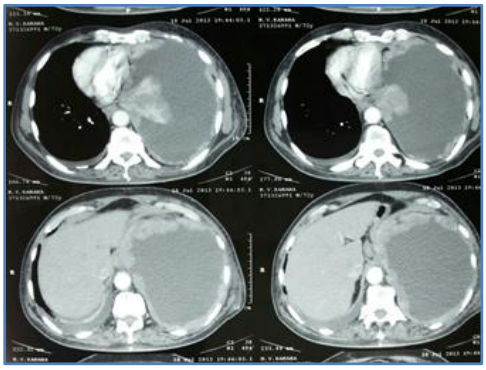

Figure 1a

Fig. 1b: Coronal CECT chest in soft tissue window showing left massive pleural effusion with nodular pleural thickening.

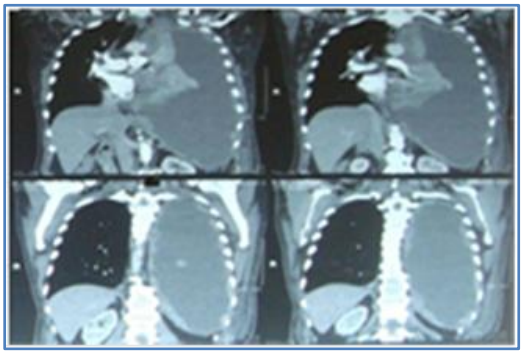

Figure 1b

Fig. 2: Histopathological examination of the sample showing spindle shaped cells arranged in a haphazard pattern with plump enlarged and elongated nuclei and multi-nucleation with atypia suggestive of sarcomatoid type of malignant pleural mesothelioma.

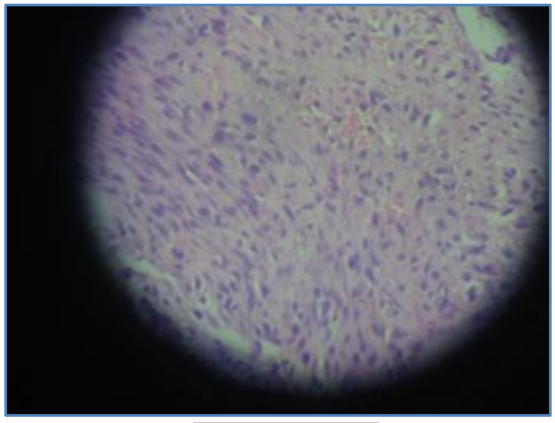

Figure 2

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