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Case Report

SILICOSIS IMPLICATED BIPHASIC MALIGNANT MESOTHELIOMA- A CASE REPORT

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ABSTRACT
Diffuse malignant mesothelioma is a rare malignant tumour arising in the pleura from mesothelial cells, and showing a diffuse pattern of growth over the pleural surfaces. It is classified into four major histological types according to WHO classification out of which biphasic accounts for 30% of cases. A 40 year old mason worker presented with dry cough, difficulty in respiration for 5 months and occasional fever. Resected specimen of pleural tissue was sent for histopathological examination. Histopathology was suggestive of biphasic mesothelioma which was further confirmed by Immunohistochemistry [positive for cytokeratin 5/6, pancytokeratin]. Studies suggest that some mesotheliomas, especially occurring in the younger age group might not be only related to asbestos but may be associated with other minerals like silica which seems to be the etiology of this case as there was a history of long occupational exposure.

Keywords: *Mesothelioma, Mason Worker, Cytokeratin 5/6, Silica*

INTRODUCTION
Diffuse malignant mesothelioma is a malignant tumour arising in the pleura from mesothelial cells, and showing a diffuse pattern of growth over the pleural surfaces. It is classified into four major histological types according to WHO classification out of which biphasic accounts for 30% of cases (Churg and Travis, 2008). This tumour is highly malignant with an average survival rate of 15 months from the onset of symptoms. It is three times more common in males, occurs mostly between 50-70 years and known to be associated with occupational exposure to certain substances. Since 1960, the association of asbestos with mesothelial carcinogenesis has been well established, however, in some mesotheliomas, especially many of those occurring in young people, may not be related to asbestos exposure. Agents such as radiation, minerals like silica and beryllium, synthetic fibres and Simian Virus 40 (SV 40) are found to be associated with mesothelioma as well (Mills).

CASES
A 40 year old mason worker presented with dry cough, difficulty in respiration for 5 months and occasional fever in the outpatient department of Surgery of our tertiary care hospital.
Detailed clinical examination was done and on examination left sided pleural effusion was found, following which patient was advised for CECT (contrast enhanced computed tomography) thorax and pleural fluid analysis. Based on their report, thoracotomy was done and resected specimen of pleural tissue was sent for histopathological examination.

DISCUSSION
CECT of thorax showed ground glass opacities in the apico-posterior segment of left upper zone with nodular opacities in the superior segment of left lower lobe with left sided pleural effusion and atelectatic changes in the underlying lung parenchyma. CECT showed features suggestive of infective etiology, however no such cause was found on subsequent examinations. Pleural fluid, on aspiration revealed mixed haemorrhagic and exudative fluid with plenty of RBCs/hpf. Cytological examination of pleural fluid did not show acid fast bacilli or any malignant or abnormal cells.

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Histopathological examination: Grossly, the resected thoracotomy specimen of pleural tissue was irregular on external appearance, thickened and firm on cut section. Margins of the tumour could not be delineated as the entire resected pleural tissue was thickened diffusely.

Microscopical examination on Haematoxylin & Eosin stained section showed tumour cells arranged in sheets, which were infiltrated into underlying stroma. The cells consist of admixture of epithelioid and sarcomatoid type. The epithelioid cells were pleomorphic, had eosinophilic cytoplasm with bland open nuclei and prominent nucleoli (Figure 1: Red arrow). The sarcomatoid component had spindle cells arranged in a haphazard distribution (Figure 2: Green arrow). The histological picture suggested that of Biphasic Malignant Mesothelioma, with a differential diagnosis of biphasic synovial sarcoma. However in synovial sarcoma cases high grade pleomorphic features are less than that of biphasic malignant mesothelioma and cells grow in long interweaving fascicles.

Immunohistochemistry was done for High molecular weight cytokeratin (HMCK5/6) and Pankeratin, both of them showed strong positivity (cytoplasmic), which ascertained it as Biphasic malignant mesothelioma.

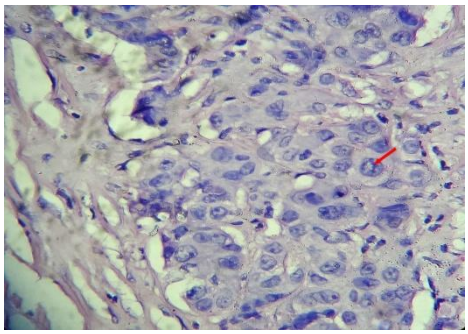

Figure 1: H & E staining of the smear showing Epithelioid component

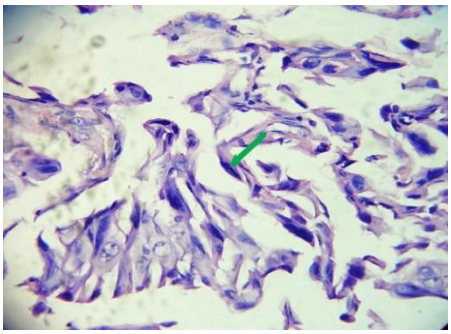

Figure 2: H & E staining of the smear showing Sarcomatoid component

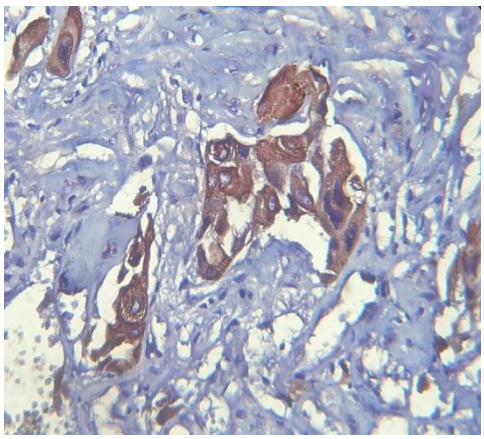

Figure 3: CK 5/6 positivity in biphasic malignant mesothelioma

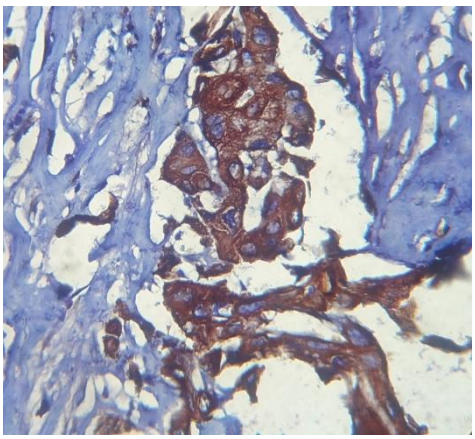

Figure 4: Pankeratin positivity in biphasic malignant mesothelioma

Discussion

Out of different causative factors mentioned above, Peterson and his colleagues (1984), found out that mineral like SiO2 or silica, one of the major components of cement used during construction works, could also be a causative agent for malignant mesothelioma. In our study, the patient is a mason worker having history of exposure to cement particles for more than 10 years and in this case silica might be a causative factor. Radiological investigation was not helpful in this case, as it suggested an infective etiology which was similar to the available literature done by Rao (2009). Histologic diagnosis is also needed to be

supported by immunohistochemistry; however one important point in histology is that synovial sarcoma has less pleomorphic features than that of malignant mesothelioma usually.

Male sex, history of dyspnoea and weight loss signifies poor prognosis in this case, but relatively young age at presentation and though biphasic more epithelioid component goes in favour good prognosis.

Conclusion

Malignant mesothelioma is a rare tumour in western world and also in India. Lack of asbestos exposure made it even more rarer in North-east region. But like in this case, as a developing region, exposure to cement particles mainly silica can be a causative agent of malignant mesothelioma occurring in this province. As clinical symptoms or radiological impression (many a times obscured by pleural effusion) may not be conclusive in these cases, a comprehensive work up in every step including a thorough histological and immunohistochemical study is necessary for correct diagnosis of malignant mesothelioma.

REFERENCES

Churg A and Travis WD (2008). WHO Classification Tumours of the Lung, Pleura, Thymus and Heart. Tumours of the pleura. *Mesothelioma* 127-146.

Mills Stacey E (No Date). *Sternberg's Diagnostic Surgical Pathology, Intrathoracic Organs and Blood Vessels*. The Pleura, 5th edition, Chapter 27.

Peterson JT, Greenberg SD and Buffler P (1984). Non-asbestos-related malignant mesothelioma: A review. *Cancer* **54** 951-960.

Sukhesh R (2009). Malignant pleural mesothelioma. *Lung India* **26**(2).