MALIGNANT PLEURAL MESOTHELIOMA TREATED BY EXTRAPLEURAL PNEUMONECTOMY - A CASE REPORT

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ABSTRACT

Malignant mesothelioma is usually a fatal neoplasm for which operation has been the mainstay of treatment because chemotherapy and radiotherapy are relatively ineffective. The choice of operation for malignant mesothelioma remains controversial. Reducing the bulk of tumor with cytoreductive surgery is key to extending survival. Two surgeries have been developed, extrapleural pneumonectomy (EPP) and pleurectomy. Extrapleural pneumonectomy has been advocated because it allows complete removal of gross tumor and can be associated with long term survival. Extrapleural pneumonectomy is associated good local control of disease with greater likelihood of relapse in distant sites.

We report a new case of diffuse malignant mesothelioma involving left lung without any distant metastasis. Patient had no history of asbestos exposure. Patient underwent extrapleural pneumonectomy with excision of left hemidiaphragm. A complete en-block resection was performed. Final histopathology and immunohistochemistry confirmed the diagnosis as malignant epithelial mesothelioma.

KEYWORDS: Pleural mesotelioma, Pleural effusion, Extrapleural pneumonectomy.

INTRODUCTION

Malignant mesothelioma is a rare neoplasm of pleura. They present with vague symptoms and pose difficulty in diagnosis and treatment. Effective treatment is limited for most patients. Multimodality treatment approach is required for optimal outcome. In this article we report a case of malignant mesothelioma to underwent complete en-block resection of tumour by EPP. Also included discussion of clinical features diagnostic dilemmas and therapeutic options.

CASE REPORT

A 38 years old female housewife presented with complain of dyspnea and left side chest discomfort for 6 months since March 2015. She had no Co morbidities and any significant past history of any chronic illness.

On physical examination patient was averagely built nourished. X-Ray chest revealed left sided pleural effusion with mediastinal shifting on right side. Pleural fluid examination revealed sero-haemorrhagic fluid which was exudative in nature. Fluid examination did not show any malignant cells and acid fast bacilli. Patient was kept on empirical anti tubercular treatment for 2 months, but there was no relief in symptoms. Repeat chest X-Ray showing left pleural effusion with pleural thickening. Intercostal drainage tube was kept. Computerized Tomographic Scan (CT scan) done that suggested left sided pleural effusion with collapse of underlying lung. Repeat cytological examination of pleural fluid suggested cells having uniform ovoid nuclei and clear to pinkish cytoplasm possibility of mesothelioma likely. Pleuroscopy and pleural biopsy was performed. On pleuroscopy multiple pleural nodules were present on visceral and parital pleura with thickening of pleura. Thick and turbid pleural fluid present. Biopsy from pleural nodules taken which was suggestive of malignant epithelial mesothelioma. To rule out distant metastasis and mediastinal lymphadenopathy. PET CT(Positron emission tomography) was done which revealed diffuse high grade hypermetabolism involving the left pleura with multiple nodularity involving lower lobe. No evidence of FDG(fluorodeoxyglucose) avid distant spread made out.

Patient had good performance status with localized disease hence planned for extrapleural pneumonectomy(EPP). A thoracotomy was performed through posterolateral incision in fifth intercostal space. On exploration parietal pleura was densely adherent with intercostal muscles which was separated by blunt...
dissection. 5th rib was excised for proper exposure. Tumor was adherent to pericardium but not infiltrating it hence separated from it by blunt and sharp dissection. Pericardium was intact. On further exploration tumor found grossly infiltrating left hemidiaphragm. Left hemi diaphragm was excised enblock along with left lung and pleura (figure 1 and 2). Previous intercostals drainage tube tract was also removed. There was no gross disease left behind. Defect at left hemidiaphragm was closed with prolene mesh. During entire surgery no abnormal cardiac event occurred. Post operative course was good and patient discharged 10 days after operation without complication. Histopathologically the tumor was diagnosed as malignant epithelial mesothelioma.

FIGURE-1: (C.T Scan showing collapsed left lung with pleural effusion).
FIGURE-1: (Extra pleural pneumonectomy specimen showing enblock removed left lung, pleura and left hemidiaphragm).

FIGURE-2: (Intra operative image after removal of tumor).

DISCUSSION

The earliest description of primary pleural malignancy was reported before 1900 and several reports suggesting causal effects from asbestos were published in the first half of twentieth century.[1] The incidence of malignant mesothelioma is increasing because long latency period from asbestos use and exposure before the 1960.[2] Malignant mesothelioma is still rare in population unexposed to asbestos with reported incidence of 1-2 per million per year.[3]

Radiological investigations reveal pleural effusion, pleural based densities or involvement of lung. As the disease process is increased lungs become encased by tumor, the mediastenum shifts as the result of volume loss. Chest C.T. SCAN is valuable in assessing the extent of disease. Detection of diaphragm invasion and invasion of endothoracic fascia or a single chest wall focus may be better with magnetic resonance imaging(MRI) compared with C.T.Scan.18F-fluorodeoxyglucose positron emission tomography(PET-CT) shows promise as a tool for differentiating benign from malignant disease as well as adjunct for staging.[4]

Diagnosis of mesothelioma is established after thoracentasis and pleural biopsy. Combined histochemical and immunohistochemical analysis of pleural fluid cell blocks are needed for confirm diagnosis. There are mainly three histological variants of malignants of malignant mesothelioma which includes epithelial sarcomatoid and biphasic. Sarcomatoid has worse prognosis than epitheloid and biphasic type.[5] Clinical course of disease is insidious and non specific. Majority of patients present with dyspnea, cough, pleuritic chest pain and fatigue.[6]

The most striking laboratory abnormality is thrombocytosis(>400,000) which is seen in 60-90% of patient and approximately 15% of patient have platelet counts greater than 1,000,000.[6]

It is difficult to differentiate mesothelioma from addenocarcinoma. So a battery of immunohistochemical stains is used to differentiate mesothelioma from other neoplasms. Two most commonly used markers are calretinine and cytokeratin 5,6. Distant metastasis is common in patient with sarcomatoid variant of pleural mesothelioma.[7] No randomized control trials has been showing any form of treatment superior. Multimodality treatment approach can be considered for treatment of malignant mesothelioma. All modalities especially extrapleural pneumonectomy(EPP) carryout short and long term risk. Arrhythmias requiring medical management are the most common post surgical complications.

The role of surgery in mesothelioma is controversial as there is lack of randomized controlled trials. Making it impossible to determine whether the use of EPP or pleurectomy improves survival or effectivly palliates the symptoms Basically operative intervention in mesothelioma falls into one of three categories:

a) For primary effusion control
b) for cytoreduction before multimodality therapy
c) to deliver and monitor innovative intrapleural therapies.

Most of the patient have had a previous biopsy and there is invasion of the endothoracic fascia and intercostal muscles at that site and or pleural effusion that although cytologically negative may be breached, leading to local permeation of tumor cells either into the residual cavity or into the abdomen. These cases can make the use of EPP mandatory as the cytoreductive operation. Pleural tumors which have no association with asbestose
exposure responds well and do not recur after surgical resection.\(^8\) Only minority of patients have less bulky disease, it may be justifiable to spare the functioning lung if the visceral pleura is minimally involved (i.e., pleurectomy). Such lung preserving surgery can be potentially be accomplished by performing a parietal pleurectomy instead of EPP. Despite availability of several diagnostic and therapeutic options most patients with malignant mesothelioma have dismal prognosis.

REFERENCES