Multiple myeloma presenting as pleural effusion in elderly

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Abstract
Multiple myeloma is a malignant proliferation of plasma cells, predominantly involving the bone marrow and skeletal system. Pleural effusions due to multiple myeloma are rare and it is very unusual for patients were diagnosed as myeloma with only clinical presentation of pleural effusion. We report a sixty three year old male who presented with a right-sided pleural effusion.

Keywords: Pleural effusion, Multiple myeloma, Elderly, Plasma cells.

Introduction
Multiple myeloma (MM) is a clonal B-cell malignancy, characterised by proliferation of plasma cells and secretion of paraproteins. This is one of the most common and represents 10% of all the malignant hematological diseases which mainly affects bone marrow although extramedullary tissues may be infiltrated as well. Pleural effusion in Multiple myeloma patients is rare, observed in less than 6% of cases; overall incidence of pleural involvement being 1-2%.[1,2]

Pleural effusion in multiple myeloma has a very poor prognosis. We present here an unusual case of a right side pleural effusion, which responded to Melphelan, Thalidomide and Corticosteroids.

Case Report
A 63 year old male patient came in our medicine out patient department with complaints of dry cough and breathlessness since 7 days. He had history of tender swelling in lower right side of chest since one month. He also had a history of loss of appetite and weakness over the preceding one month. There was no history of haemoptysis. He denied any history of hypertension, diabetes mellitus, tuberculosis, bronchial asthma in the past. He was occasional smoker and alcoholic.

On examination at the time of admission, he was afebrile, pulse rate 80/min, respiratory rate 26/min and blood pressure 120/80 mmHg in right arm supine position. Examination revealed a stony dullness and absent breath sounds in the right mid and lower zones of the chest. Examination of cardiovascular system and gastrointestinal system was absolutely normal.

His routine investigation revealed haemoglobin as 9.0 gm/dl; white cell count 8200/mm^3 with normal differential count and platelets count. The erythrocyte sedimentation rate (ESR) was 120 mm in the first hour. Serum creatinine was 1.2 mg/dl, while serum electrolytes were normal. His total protein was 7.8 gm/dl and albumin 3.8 gm/dl. Serum calcium, serum uric acid, and serum phosphate were within the normal range. His liver function test was within normal limits. Urine for Bence Jones protein was negative.

The chest X-ray showed a moderate right-sided pleural effusion (**Fig. 1**). An ultrasound scan of the chest confirmed the pleural effusion, which was not locculated. Pleural fluid analysis revealed hemorrhagic exudate which was sterile on culture and did not reveal any acid fast organisms as well as any malignant cells on smears. Pleural fluid adenosine deaminase level was within normal limits.

We also done Ultrasonography guided Fine Needle Aspiration Cytology from the swelling in front of right sided third rib [anterior end] which was suggestive of lesion of plasmacytoma. A bone marrow study was performed in which the bone marrow aspirate revealed 62% of cells as plasma blast and plasma cells with large binucleated nuclei suggestive of multiple myeloma (Fig. 2). His Contrast enhanced computed tomography of the thorax was suggestive of erosion in the anterior end of right 3rd rib (Fig. 3). Serum protein electrophoresis showed a monoclonal band confirming multiple myeloma. Patient was started with the treatment of thalidomide, melphelan and corticosteroids. He was doing well on follow up; his pleural effusion subsided subsequently with this treatment.

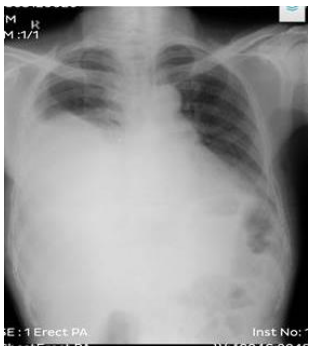

Fig. 1: Chest X-ray PA view showing right sided pleural effusion

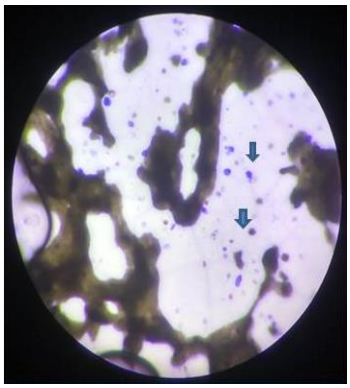

Fig. 2: Bone marrow picture showing plasma cells (arrow head)

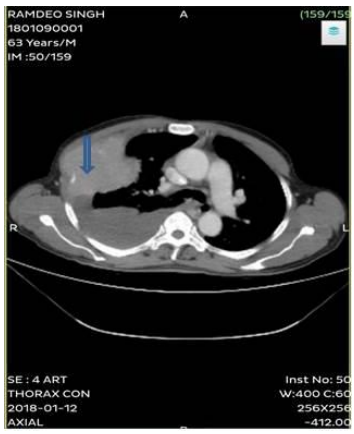

Fig. 3: HRCT chest showing mass with erosion in the anterior end of 3rd rib (arrow head)

Discussion

Pleural effusion as the first manifestation of multiple myeloma is exceptional. Possible causative factors which lead to pleural effusion in MM, includes congestive heart failure secondary to amyloidosis, chronic renal failure, nephritic syndrome secondary to renal tubular infiltration with paraprotein and development of glomerular damage, direct infiltration of pleural fluid from adjacent tissues, hypoalbuminemia, pulmonary embolism, secondary neoplasm, lymphatic drainage obstruction by tumor infiltration, infection and pleural myelomatous involvement.[2-4]

Exact pathogenesis of myelomatous pleural effusion is unknown; however possible mechanisms may be invasion from adjacent skeletal lesions, extension from chest wall plasmacytomas and direct pleural involvement by the myeloma.[1] Our patient had lytic lesions or plasmacytomas in the adjacent rib cage making this mechanism likely in this case.

Most of the pleural effusion is seen in a late stage of MM with a poor prognosis of the median survival time hardly exceeding 4 months.[3] According to previous reports, left-sided pleural effusion is mostly seen.[3,4] However, bilateral sided pleural effusion caused by MM is extremely rare.[5,6] In our case it was right sided pleural effusion.

The ideal means for the diagnosis of myelomatous pleural effusion is the cytological identification of malignant plasma cells within the pleural fluid, though not seen in our case.[3,4]

Multiple myeloma associated with myelomatous pleural effusion has a poor prognosis and is probably a late manifestation in the natural history of myeloma.[7,8] The reported length of survival generally has been less than four months[5]. A malignant effusion in myeloma patients places the patient in advanced stage. These patients are usually resistant to treatment and often relapse in spite of aggressive chemo-radiotherapy necessitating pleurodesis.[5-7] Moreover, recognition of the atypical plasma cells in the fluid is critical for therapeutic and prognostic considerations.[9,10] In our patient there was no demonstrable plasma cell in pleural fluid, this may be the reason for well response with the treatment and good survival.

In conclusion, myelomatous pleural effusion is a rare finding and has a relatively good prognosis, having no plasma cell in the fluid. Due to the multiple causes of pleural effusion, in patients with myeloma, cytological examination of the fluid for myeloma cell should be performed wherever possible.

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