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CASE REPORT

Cytological Diagnosis of Multiple Myeloma Presenting as Unilateral Pleural Effusion: A Rare Case Report

Kalita Lohit kumar[1], Kalita Chayanika[2], Gogoi Pabitra Kumar[3], Sarma Umesh Chndra[4]

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ABSTRACT

Multiple myeloma presenting as a pleural effusion is extremely rare. Generally, it is a late complication which is associated with a poor prognosis. A 58-year-old male presented with severe weakness, palpitation on exertion, dyspnea and fever for last four months. Clinically he was diagnosed as pulmonary tuberculosis. Chest radiograph showed left sided pleural effusion. Pleural cytology revealed numerous plasma cells, consisting of mature and immature - binucleated and atypical types. Cytological differential diagnosis included myelomatous effusion and immunoblastic type non-Hodgkin's lymphoma. Bone marrow biopsy and serum protein electrophoresis confirmed the diagnosis as plasmoblastic type multiple myeloma. Although extremely rare, Myelomatous pleural effusion as an initial presentation should always be considered in presence of atypical plasma cells in body fluids irrespective of age.

***Keywords**:Cancer, Mediastinum, Cardiac, Infection*

INTRODUCTION

Multiple Myeloma (myelo + oma = marrow + tumors) is a malignant proliferation of plasma cell and plasmacytoid cells characterised nearly always by the presence, in the serum and/or urine, of a monoclonal;l immunoglobulin (Ig) or Ig fragment.[1-4] Multiple Myeloma (MM) is the most common form of plasma cell dyscrasia, affecting B-cells that have traversed the postgerminal center. It is characterized by clonal proliferation, in bone marrow microenvironment, of malignant plasma cells that secrete a monoclonal immunoglobulin called M-protein, usually IgG or IgA and detectable by serum protein electrophoresis, or only circulating k or ë-free light chains. Malignant pleural effusion in multiple myeloma is a rare

Address for correspondence and reprint:
[1]Assistant Professor (**Corresponding Author**)
Department of Oncology, Gauhati Medical College and Hospital, Guwahati, Assam
Email: lkkalita2013@gmail.com
Mobile: 9435061804
[2]Assistant Professor, Department of Dermatology, Gauhati Medical College and Hospital, Guwahati, Assam
[3]Prof. and HOD, (Rtd)., Department of Clinical Hematology, Gauhati Medical College and Hospital, Guwahati, Assam
[4]Vice-Chancellor, Srimanta Sankadeva University of Health Sciences, Narakasur Hill-Top, Guwahati Assam

condition and is seen in less than 1% of multiple myeloma cases.[5] Most importantly, in practical scenario identification of the atypical plasma cells in body fluids is important and often be missed when these are scant and mature appearing. Hence, recognition of atypical plasma cells in fluids is critical in respect of both therapeutic and prognostic considerations as this feature indicates a poor prognosis.[6] To our knowledge, in literature there have been very few cases reported so far, in which pleural effusion was the initial presentation.[6-11] Here, we report atypical presentation of multiple myeloma as left sided pleural effusion in an elderly patient.

CASE HISTORY

A 58-year-old male presented with severe weakness, palpitation on exertion, dyspnea and fever for last four months. There was history of headache with nausea, occasional mild fever for which he was receiving conservative treatment from local treating physician. There was no significant past history in his life except one episode of blood vomiting around ten years back, which was diagnosed as ruptured peptic ulcer and got recovered on conservative treatment. There was no family history of tuberculosis, malignancy, bleeding disorders or sudden death.

FINDINGS

Clinical examination revealed pallor, generalized bony tenderness, signs of left sided pleural effusion, no sign of pulmonary hypertension, organomegaly, cardiac or renal failure.

A diagnostic pleural aspiration was performed and cytospin preparation was made. Giemsa stained smears showed high cellularity, comprising of many mature and immature plasma cells in a proteinaeous and haemorrhagic background (**Figure 4**). These cells had abundant dense blue cytoplasm and a large eccentric nucleus. Moreover, frequent binucleated and multinucleate forms, mitotic figures and scattered plasmablasts with prominent nucleoli were also observed. Based on these findings, a diagnosis of plasma cell dyscrasia versus immunoblastic type non-Hodgkin's lymphoma was suggested. Skeletal survey, serum protein immunoelectropheresis, bone marrow aspiration and biopsy were advised to confirm the diagnosis. Laboratory investigation revealed Hemoglobin – 7.8 g/dl, ESR-120 mm ATEFH, peripheral smear showed marked rouleax formation, RBS – 73 mg/dl, LDH-904 U/L, serum creatinine – 0.9 mg/dl, pleural fluid for ADA 11.6 U/L, Serum protein electrophoresis showed no M –band, B2-microglobulin-3.32 mg/L (normal – 0.81 – 2.19 mg/L), Bronchial lavage fluid did not show malignant cells, no AFB and fungal elememts seen on bronchial aspirate, PSA-0.92 ng/ml. Bone marrow aspiration examination showed 60% plasma cell constituting both mature and immature type (**Figure 3**). Chest radiographs suggested left sided pleural effusion with mediestinal midline shift towards right side (**Figure 1**). X-ray skull demonstrated multiple punched out radiolucent lytic areas (**Figure 2**). Based on the above findings, a final diagnosis of nonsecretory multiple myeloma of plasmablastic type (MMPT) was made.

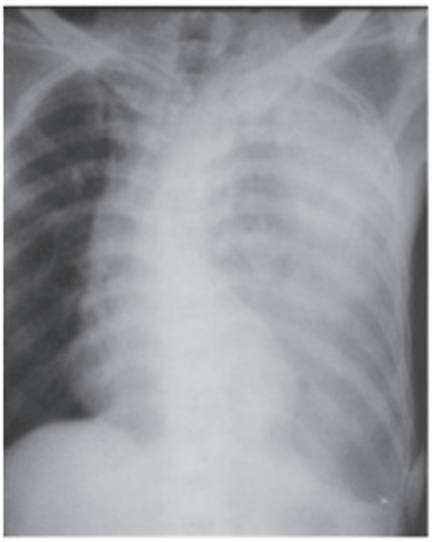

Figure 1 Chest radiographs suggested left sided pleural effusion with mediestinal midline shift towards right side

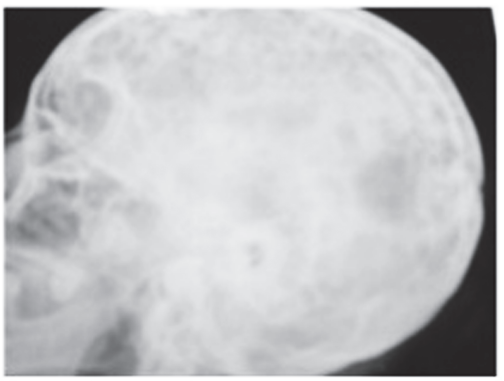

Figure 2 X-ray skull demonstrated multiple punched out radiolucent lytic areas

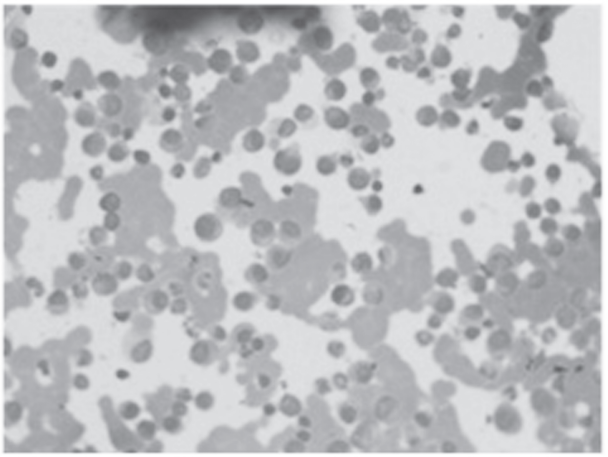

Figure 3 Bone marrow aspiration examination showed 60% plasma cell constituting both mature and immature type

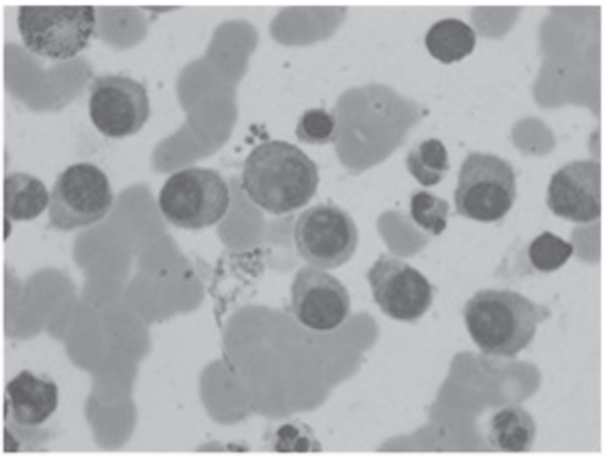

Figure 4 Giemsa stained smears of pleural fluid showed high cellularity, comprising of many mature and immature plasma cells in a proteinaeous and haemorrhagic background

DISCUSSION

Multiple Myeloma is a malignant proliferation of plasma cell and plasmacytoid cells characterised nearly always by the presence, in the serum and/or urine, of a monoclonal;l immunoglobulin (Ig) or Ig fragment. It usually occurs in elderly patients (mean age 71 years) and presents weakness, easy fatiguability, bone pains with or without pathological fractures, renal failure and recurrent infections.[12] Malignant pleural effusion is usually a rare and late complication in the course of the disease.[7,9,13] Hence, other etiologies of reactive pleural effusions like pneumonia, tuberculosis, congestive heart failure, collagen vascular disease, viral illness, carcinomatosis, AIDS and pulmonary thromboembolism should be excluded before a diagnosis of malignant myelomatous effusion is made.[13] On cytological examination,the picture can have a predominant lymphocytic infiltration with scattered plasma cells showing atypical nuclear features. Other common conditions of the non-myelomatous effusions that present with pleural effusion includes NHL, acute and chronic lymphoid leukemias, especially those with concomitant mediastinal involvement.[5, 10, 11] Thus, the cytomorphology of the plasma cells along with the clinical profile are helpful in differentiating reactive from malignant plasma cell infiltrates. High cellularity with a predominant plasma cell population in a haemorrhagic or necrotic background is suggestive of a malignant effusion. Prominent morphological features of malignant plasma cells are nuclear pleomorphism, prominent nucleoli, frequent mitosis and asynchronous maturation of the nucleus in relation to the cytoplasm. The three processes like Pleural fluid electrophoresis, flow cytometry and immunocytochemistry aid in confirming the monoclonality of the plasma cells.[13] Malignant pleural effusions in myeloma patients are usually resistant to treatment and often relapse in spite of aggressive chemo-radiotherapy necessitating pleurodesis.[6, 8] It is an alarming presentation, signifying worst prognosis. Death usually occurs within a few days to months. Therefore, recognition of the atypical plasma cells in the fluid is considered critical for therapeutic and prognostic point of views.[13] The present case is rare because the diagnosis was unsuspected in an elderly patient presenting with left sided pleural effusion. The message to the physicians is that the presence of atypical plasma cells in the body fluids should be carefully interpreted irrespective of the age and the patient should be thoroughly assessed for multiple myeloma.

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