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Multiple myeloma in 25 years old patient

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Abstract

Multiple Myeloma is a disease of elderly but can rarely be found in young patients too. We diagnosed this case of MM in a 25 year old patient which was the youngest age at diagnosis reported in this part of the world (Peshawar, Pakistan).

Keywords

multiple myeloma; young age

Introduction

Multiple myeloma (MM) is characterized by the neoplastic proliferation of immunoglobulin-producing plasma cells. Most patients with MM present with signs or symptoms related to the infiltration of plasma cells into the bone or other organs or to kidney damage from excess light chains. Common presentations include anemia (73%), bone pain (58%), elevated creatinine (48%) or serum protein, fatigue (32%), hypercalcemia (28%) and weight loss (24%). Less common, but emergent presentations include spinal cord compression and severe hypercalcemia [1].

MM is a disease of older adults. The median age at diagnosis is 66 years; only 10 and 2 percent of patients are younger than 50 and 40 years, respectively [2,3].

In patients with suspected myeloma or related disorders, appropriate initial screening tests include a serum protein electrophoresis along with immunofixation, and a serum free light chain assay. A 24-hour urine collection for electrophoresis and immunofixation must be done if a diagnosis of multiple myeloma is made. Further evaluation to confirm the diagnosis of MM includes a bone marrow aspiration and biopsy, a metastatic bone survey, a complete blood count with differential and a chemistry screen [4,5].

Although there are some exceptions, the diagnosis of symptomatic MM is usually made by meeting the following three criteria [4,5]:

- Presence of an M-protein in serum and/or urine
- Presence of 10% or more clonal bone marrow plasma cells or a biopsy proven plasmacytoma
- Presence of related organ or tissue impairment that can be attributed to the plasma cell proliferative disorder (e.g., increased calcium, renal insufficiency, anemia, lytic bone lesions)

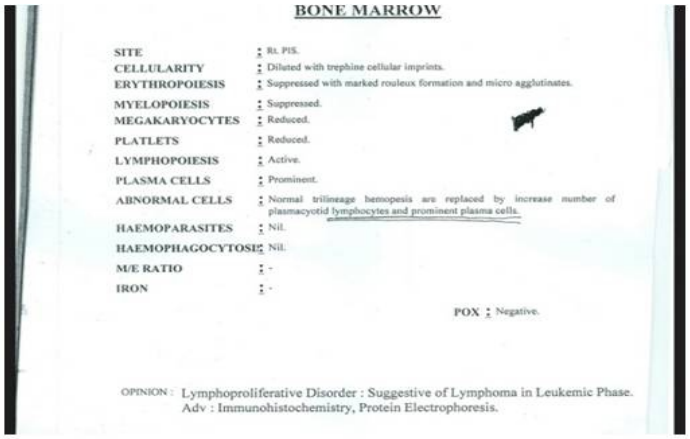
The differential diagnosis for MM includes monoclonal gammopathy of undetermined significance (MGUS), smoldering multiple myeloma (SMM), Waldenström macroglobulinemia, solitary plasmacytoma, Amyloid light-chain (AL) amyloidosis, and metastatic carcinoma.

Case Report

25 years old male patient presented with fever since 10 days and dry cough since 2 months. He also reported undocumented weight loss over the span of 2 months. On examination he was ill looking and pale with bony tenderness but without any lymphadenopathy and hepatosplenomegaly. His past and family history was insignificant. He was admitted to medical unit for further workup. The baseline investigations were sent which included Full blood count (FBC), Liver function tests (LFTs), and Renal function tests (RFTs).

His FBC showed pancytopenia and deranged RFTs with Urea of 46 mg/dl (Normal: 9-45mg/dl) and Creatinine of 2.34 mg/dl (Normal: 0.50-1.50mg/dl). Based on these findings, his peripheral smear was sent that showed normocytic normochromic anemia with rouleux formation, a total leukocyte count(TLC) of 2800/cmm with 55% polymorphs, 33% lymphocytes and 12% monocytes and Platelet count of 75000/cmm. His serum total protein was 10 g/dl (Normal: 6.0-7.8 g/dl) and serum albumin was 3.0 g/dl (Normal: 3.5-5.5 g/dl) that gives him a globulin gap of 7.0 g/dl (Normal: 2.3-3.5 g/dl).

The high globulin gap along with the history prompts a suspicion of some gammopathy. So the patient was advised bone marrow biopsy, protein electrophoresis and immunohistochemistry which showed the following results:



BONE MARROW

SITE	: Rt. PIS.
CELLULARITY	: Diluted with trephine cellular imprints.
ERYTHROPOIESIS	: Suppressed with marked rouleux formation and micro agglutinates.
MYELOPOIESIS	: Suppressed.
MEGAKARYOCYTES	: Reduced.
PLATLETS	: Reduced.
LYMPHOPOIESIS	: Active.
PLASMA CELLS	: Prominent.
ABNORMAL CELLS	: Normal trilineage hemopesis are replaced by increase number of plasmacytoid lymphocytes and prominent plasma cells.
HAEMOPARASITES	: Nil.
HAEMOPHAGOCYTOSIS	: Nil.
M/E RATIO	: -
IRON	: -

POX : Negative.

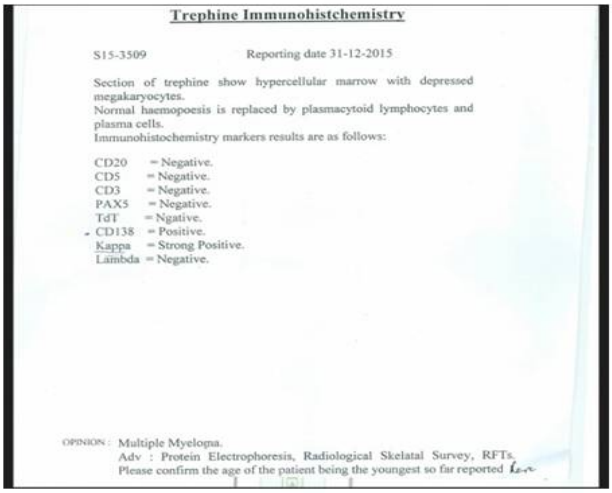
OPINION : Lymphoproliferative Disorder : Suggestive of Lymphoma in Leukemic Phase.
Adv : Immunohistochemistry, Protein Electrophoresis.

Trephine Biopsy

CP # 5190-15 Reporting date 21-12-2015

Section of trephine show hypercellular marrow with few megakaryocytes.
Erythropoesis & Myelopoesis are replaced by monotonous population of Lymphocytoid / Blasts cells.

OPINION : Lymphoproliferative Disorder.
Adv : Immunohistochemistry.



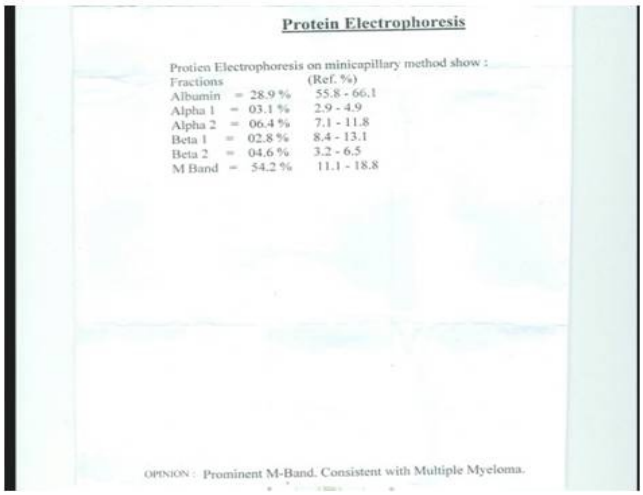
Trephine Immunohistchemistry

S15-3509 Reporting date 31-12-2015

Section of trephine show hypercellular marrow with depressed megakaryocytes.
Normal haemopoesis is replaced by plasmacytoid lymphocytes and plasma cells.
Immunohistochemistry markers results are as follows:

CD20	= Negative.
CD5	= Negative.
CD3	= Negative.
PAX5	= Negative.
TdT	= Ngative.
CD138	= Positive.
Kappa	= Strong Positive.
Lambda	= Negative.

OPINION : Multiple Myeloma.
Adv : Protein Electrophoresis, Radiological Skelatal Survey, RFTs.
Please confirm the age of the patient being the youngest so far reported.



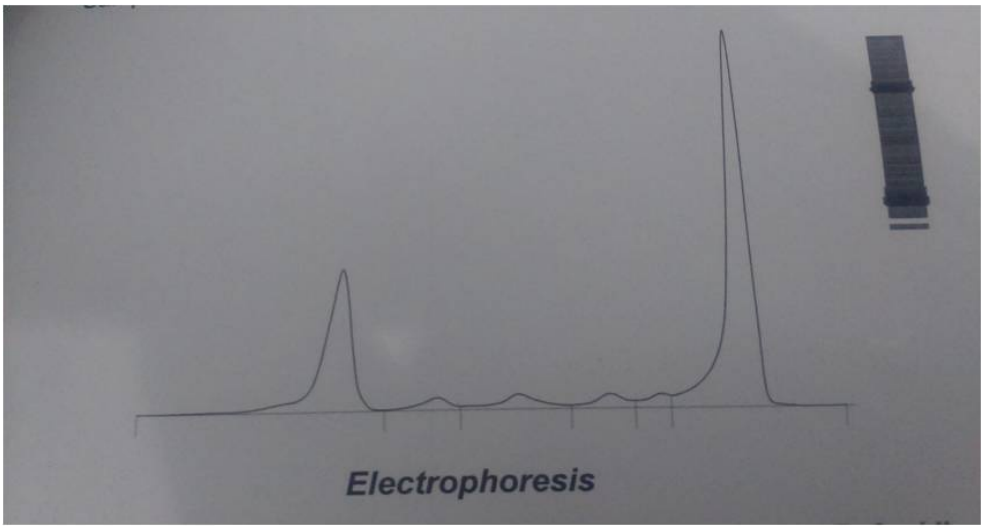
Protein Electrophoresis

Protien Electrophoresis on minicapillary method show :

Fractions		(Ref. %)
Albumin	= 28.9 %	55.8 - 66.1
Alpha 1	= 03.1 %	2.9 - 4.9
Alpha 2	= 06.4 %	7.1 - 11.8
Beta 1	= 02.8 %	8.4 - 13.1
Beta 2	= 04.6 %	3.2 - 6.5
M Band	= 54.2 %	11.1 - 18.8

OPINION : Prominent M-Band. Consistent with Multiple Myeloma.

Figure



The patient was diagnosed as a case of Multiple Myeloma at the age of 25 years because of CD138, a plasma cell marker, being positive, kappa strongly positive, predominant plasma cells in bone marrow and prominent M band on electrophoresis along with end organ damage in the form of high creatinine and anemia. The patient was put on I/V antibiotics and iron supplements. During the workup the patient developed flash pulmonary edema and went into acute renal failure and was shifted immediately to medical ICU. Before the patient was started on any treatment for MM, the patient expired.

Discussion

MM is a disease of elderly and is extremely rare in those below 30 years of age. 2 patients with MM diagnosed at 20 years and 18 years were reported from India in British Journal of radiology. Both presented with extradural cord compression, lytic bone lesions and bone marrow plasmacytosis. One patient received combination chemotherapy and radiotherapy and survived for 14 years [6]. Another case of MM was reported in a 28 year old woman who presented with pain in anterior wall of the chest and tenderness over the ribs, thoracic spine, and right shoulder. Skeletal survey revealed small lucencis in the ribs, humeri and shoulders, characteristic of MM [7].

Although MM is very rare in young age but it can present atypically. Suspicion of MM is not wrong in young adults when they present that way and the diagnostic investigations for MM should be done so that the patient can be diagnosed in time and put on treatment.

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