Open Access Case Report

Unusual Presentation of Multiple Myeloma as Myeloma Ascites - Case Report

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Abstract

Multiple Myeloma is a malignant plasma cell disorder. Aggressive myeloma may involve extramedullary sites. Ascites due to peritoneal involvement by clonal plasma cells is rare at initial presentation. We report an unusual case of IgA Lambda Multiple Myeloma in a 48-year old male patient, who presented with myelomatous ascites and sparing of skeletal system.

Keywords: Multiple Myeloma, extramedullary, myelomatous ascites, plasma cells, peritoneal.

Introduction

Multiple Myeloma (MM) is a clonal neoplasm of plasma cells that constitutes about 10% of all haematological malignant disorders.[1] Multiple diagnosis of myeloma requires the presence of either 10% or more clonal plasma cells on bone marrow examination or a biopsy-proven plasmacytoma along with features of end-organ damage (hypercalcemia, renal failure, anemia, or lytic bony lesions) and three specific biomarkers: clonal bone marrow plasma cells of $\geq$ 60%, serum free light chain (FLC) ratio of $\geq$ 100 and more than one focal lesion on Magnetic Resonance Imaging (MRI)[2] Clinically, the presentation of patients may range from asymptomatic to symptomatic, with severe complications. Extramedullary myeloma is defined by the presence of plasma cells outside the bone marrow in a patient diagnosed with multiple myeloma.[3] These aggressive and poorly prognosis myelomas invade organs other than bone marrow, lymph nodes, and the reticuloendothelial system.[4] Peritoneal involvement of multiple myeloma manifesting as myelomatous ascites is a rare condition and has been described in only few case reports. [5,6] Here, we describe an unusual case of multiple myeloma with extramedullary involvement having gastrointestinal symptoms and ascites at initial presentation, with sparing of bones.

Case Report

A 48 year old male patient was admitted with complaints of early satiety, abdominal discomfort and distension after food intake associated with burps and anorexia for 1 month. There was also associated history of exertional dyspnea, generalized body weakness, undocumented weight loss, constipation and hematochezia due to hemorrhoids. His past medical history and family history were unremarkable. Physical examination revealed pallor, raised Jugular Venous Pressure, massive ascites and generalized body edema. No palpable visceromegaly or lymph node enlargement was appreciated. Initial laboratory work-up at presentation showed hemoglobin of 5 g/dL, MCV of 95 fL, white blood cell count of 6.6 × 10^9/L (granulocytes 68%, lymphocytes 15%, monocytes 11%, eosinophils 01% and metamyelocytes 05%), and platelet count of 163 × 10^9/L. ESR was 130 mm/first hour. Peripheral film showed features of mixed deficiency anemia with rouleaux formation. His serum sodium, potassium, blood urea nitrogen, creatinine, uric acid, total bilirubin, ALT, Alkaline Phosphatase and corrected calcium levels were normal at presentation. Other laboratory test results were as follows: albumin 2.59 g/dL, LDH 196 U/L, CRP 10 mg/L, Vitamin B12 127.5 pg/ml, folic acid 1.47 ng/ml, ferritin 30 ng/ml. HbsAg, Anti-HCV and anti-HIV by ELISA were negative. Upper GI endocopy was unremarkable. Colonoscopy showed internal hemorrhoids. CT-Scan

Abdomen and Pelvis revealed ascites. Echocardiography showed moderate tricuspid regurgitation, mild mitral regurgitation, moderate biatrial enlargement, dilated IVC with < 50% respiratory collapsed and ejection fraction of 60%. CT Pulmonary Angiogram and High Resolution CT were unremarkable. Bone marrow aspiration was a diluted tap while on trephine biopsy there was diffuse infiltration by plasma cells (Figure 1) with diffuse II focal III fibrosis on reticulin stain (Figure 2).

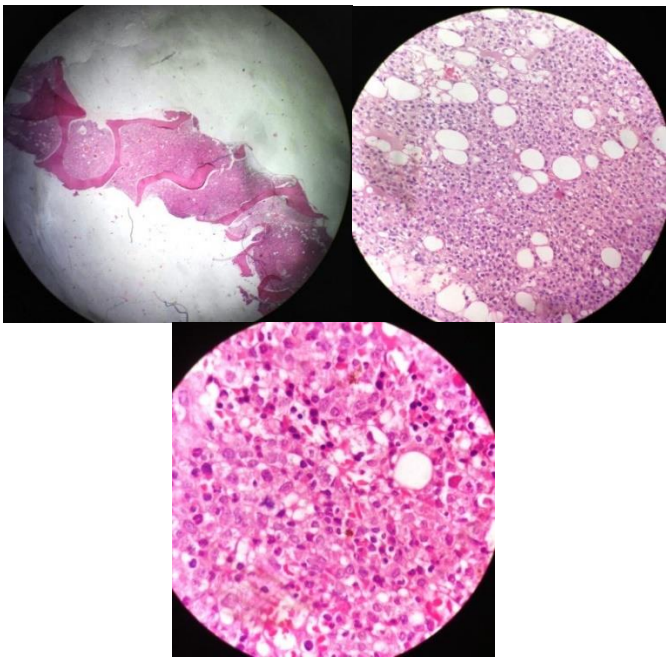

Figure 1: Bone Marrow Trephine Biopsy showing infiltration by plasma cells (H&E Stain 40X, 400X, 1000X)

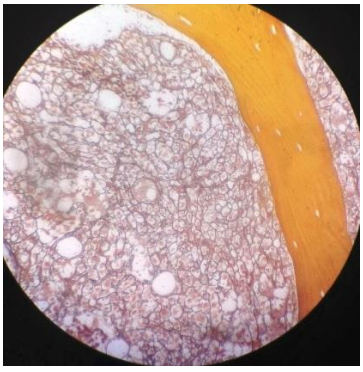

Figure 2. Bone Marrow Trephine Biopsy – showing grade diffuse II, focal III fibrosis (Reticulin Stain, 400X)

Immunohistochemical stains for kappa and lambda light chain revealed lambda monoclonality, consistent with plasma cell myeloma (Figure 3). Congo red stain for AL-amyloidosis was negative. Quantitative serum immunoglobulin levels were IgA 5499 mg/dl, IgG 437 mg/dl, and IgM 28 mg/dl. Serum protein electrophoresis showed an M band in the gamma region. Serum immunofixation showed IgA Lambda paraprotein. Bence Jones Proteins were negative. Beta-2 Microglobulin was 11.9 mg/L and no osteolytic lesions were observed on skeletal survey. Serum free light chain analysis showed free kappa of 1.6 mg/L, free lambda of 782.7 mg/L and a kappa/Lambda ratio of 0.002. This significant increase in serum free lambda light chains and a significant reduction in kappa free light chains were also indicative of lambda associated monoclonal gammopathy. The disease was given stage III according to International Staging System. Routine examination of ascitic tap showed slightly turbid, pale yellow fluid with total protein 4.48 g/dl, albumin 1.33 g/dl, LDH 110 U/L and sugar 114 mg/dl. Cytology revealed some malignant-appearing plasma cells, consistent with myelomatous involvement (Figure 4). Monoclonal band in gamma region was also confirmed on ascitic-fluid protein electrophoresis. During the work-up period, renal function tests started to worsen with reduced urine output for which alternate day sessions of Hemodialysis and Plasma exchange were carried out. Multiple units of RCC were transfused; diuretics and hematinic therapy were given.

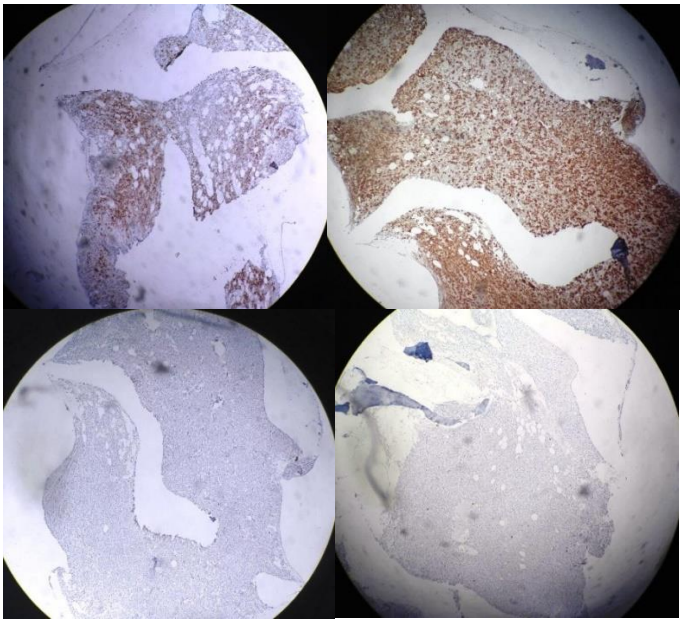

Figure 3: Immunohistochemistry on Trephine Biopsy (CD138 Positive, Lambda Positive, Kappa negative, and CD56 negative)

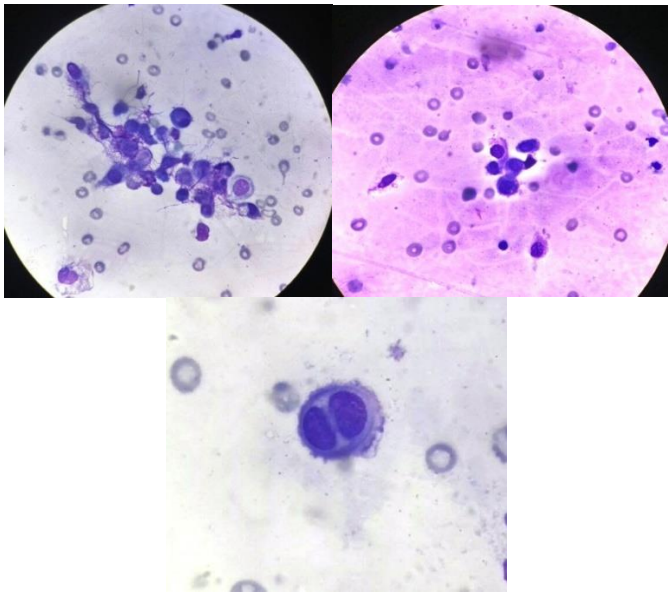

Figure 4: Ascitic Fluid microscopy showing abnormal plasma cells (Giemsa stain 400X, 400X, 1000X)

Patient was started on CyBorD (Cyclophosphamide, Bortezomib, Dexamethasone) chemotherapy regimen for myeloma (total 16 weekly doses). The patient completed the four cycles, with significant improvement in ascites, body edema, renal and cardiac function. However, before commencement of 5th cycle, the patient developed respiratory tract infection, limiting the chemotherapy initiation. His hemoglobin dropped to 7.5 g/dl, and on peripheral smear 5% plasma cells, myeloid precursors and marked Rouleaux formation were observed. Rapidly, TLC rose to 14,000/µl and the plasma cells increased to 23% (absolute count 3200/µl) with an extremely high value of serum IgA levels of >8500. Unfortunately, the patient succumbed to severe sepsis in a short time following this transformation to plasma cell leukemia.

Discussion

This rare case describes a patient with multiple myeloma who presented with gastrointestinal symptoms and myelomatous ascites. Myelomatous ascites is a rarely encountered condition and can occur anytime during the course of the disease. It is often associated with Pulmonary Hypertension due to hepatic involvement or can develop as a consequence of infectious peritonitis. Less frequently, myelomatous ascites is caused by actual involvement of peritoneum by malignant plasma cells. [7]

Several cases of myelomatous ascites have been reported in literature. It can occur as an initial sign of aggressive myeloma or develop late during its natural history.[4] Myelomatous involvement of body cavity fluids is unusual, found in less than 1% of patients, with the occurrence of pleural effusions being twice more common than peritoneal effusions, while pericardial effusions are rare. [8]

Our patient presented with myelomatous ascites due to peritoneal involvement of multiple myeloma aggravated by multiple factors such as hypoalbuminemia, renal derangement and right-sided heart failure. In contrast to secondary ascites occurring due to hepatic, renal or cardiac involvement in myeloma patients, the malignant plasmacytic ascites has large, bizzare looking, non-cohesive plasma cells, and a high cell count of 800–9,000 cells/mm^3; which can lead to diagnostic confusion with reactive mesothelial cells, atypical lymphocytes, or metastatic carcinoma cells. Immunocytochemistry, flow Cytometry or immunofluorescence can be used to differentiate the plasma cells. [9] In our patient, cell count of ascitic fluid was low with only few plasma cells, however considering the suspicion of myelomatous involvement, Protein electrophoresis was carried out revealing a monoclonal band in gamma region.

Most reported cases have been associated with IgA type of myeloma.[10] In one case series, multiple myeloma cases in which myelomatous ascites was a presenting feature, there was absolute or relative sparing of the skeleton.[6] In our case the paraprotein was IgA lambda type and there were no osteolytic lesions on skeletal survey. It is mostly associated with poor prognosis. Karp and Shareef[11] reported the median survival after the development of ascites to be only 1.5 months. However, cases of successful treatment have been described as well. In one case report, Alegre et al. showed that ascites in the course of MM may respond for longer periods to high-dose chemotherapy followed by Autologous Stem Cell Transplantation.[12] Our patient completed 4 cycles of CyBorD successfully, however he succumbed to severe sepsis and could not survive after transformation to plasma cell leukemia, in a short time period of 6 months following diagnosis.

Conclusion

In conclusion, myelomatous ascites is rare at initial presentation of multiple myeloma, has very poor prognosis and can cause diagnostic confusion.

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