Case report

Multiple myeloma with myelomatous ascites

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Abstract:

Myelomatous ascites is a rare clinical manifestation of multiple myeloma and may be associated with the advanced-stage disease. The case of an elderly man was presented with new-onset ascites, progressive back pain and renal failure. Microscopic examination of the ascites fluid revealed numerous abnormal plasma cells, while a bone marrow biopsy confirmed multiple myeloma. The patient did not respond to a bortezomib-dexamethasone regimen and experienced the progression and complications of the disease.

Keywords : ● *Ascites* ● *Multiple myeloma* ● *Myelomatous ascites*

J Hematol Transfus Med. 2021;31:363-8.

Received 23 June 2021 Corrected 26 August 2021 Accepted 27 September 2021

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รายงานผู้ป่วย

ผู้ป่วยภาวะน้ำในเยื่อบุช่องท้องจากมะเร็งไขกระดูกชนิดมัยอีโลมา

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บทคัดย่อ

ภาวะน้ำในเยื่อบุช่องท้องจากมะเร็งไขกระดูกชนิดมัยอิโลมา เป็นอาการแสดงที่พบได้ไม่บ่อยของโรคดังกล่าว และอาจจะสัมพันธ์กับโรคอยู่ในระยะลุกลาม รายงานฉบับนี้บรรยายถึงผู้ป่วยสูงอายุที่มาด้วยภาวะน้ำในเยื่อบุช่องท้องที่ไม่เคยเป็นมาก่อน ร่วมกับอาการปวดหลังเรื้อรังและไตวาย การส่งตรวจทางกล้องจุลทรรศน์จากน้ำในเยื่อบุช่องท้อง ตรวจพบเซลล์เม็ดเลือดขาวชนิดพลาสมาที่ผิดปกติ และผลตรวจชิ้นเนื้อจากไขกระดูกพบว่าเป็นมะเร็งไขกระดูกชนิดมัยอีโลมา ผู้ป่วยรายนี้ไม่ตอบสนองต่อการรักษาด้วยยาออกฤทธิ์พุ่งเป้า (Bortezomib) และ Dexamethasone โดยผู้ป่วยมีอาการแย่ลงลงจากการลุกลามของตัวโรคและภาวะแทรกซ้อนที่เกิดขึ้น

คำสำคัญ : ● *ท้องมาน* ● *น้ำในเยื่อบุช่องท้อง* ● *มะเร็งไขกระดูกชนิดมัยอีโลมา*

วารสารโลหิตวิทยาและเวชศาสตร์บริการโลหิต. 2564;31:363-8.

Introduction

Ascites is the pathologic accumulation of fluid within the peritoneal cavity caused by numerous mechanisms such as portal hypertension, peritoneal disease, and hypoalbuminemia. Portal hypertension accounts for approximately 80% of cases. Ascites often occurs with hematologic malignancies such as lymphoma and multiple myeloma. Investigating the etiologies of and complications resulting from ascites is crucial. Here, we showed the case of an elderly man who presented new-onset ascites and progressive back pain. The final diagnosis was multiple myeloma with myelomatous ascites.

Case presentation and clinical course

A 64-year-old man was admitted for investigation of new-onset ascites, progressive low back pain and significant weight loss during the previous eight weeks. Past medical history included chronic kidney disease with bilateral renal calculi and a cerebrovascular accident. No symptoms of fever, change in stool caliber or dysuria were noted. A physical examination revealed moderately pale conjunctivae and numerous ascites without signs of chronic liver disease. No hepatosplenomegaly nor lymphadenopathy was recorded, and a neurological examination showed no impairment.

A complete blood count revealed hemoglobin of 8.0 g/dL, with other differential counts within the normal limits. A peripheral blood smear revealed normochromic normocytic red blood cells with rouleaux formation. Blood chemistry showed acute kidney injury (serum Cr 4.07 mg/dL) with mild hypercalcemia (11.7 mg/dL), hyperphosphatemia (6.5 mg/dL) and hyperglobulinemia (4.7 g/dL). Several osteolytic lesions were revealed in the bone survey.

Results from a whole abdominal ultrasonography were normal, except for moderate free fluid in the abdomen. An ascites profile showed narrow serum ascites albumin gradient (SAAG) 0.5 g/dL with high ascites total protein (5.1 g/dL).

Relevant investigations to identify the etiology of ascites are shown in Table 1. An immunohistochemical stain for kappa and lambda light chains in the bone marrow showed kappa monoclonality, consistent with plasma cell myeloma, and the detection of IgA gammopathy in immunofixation and beta-migration of IgA monoclonal protein on serum protein electrophoresis (Figure 1). Myelomatous ascites was confirmed by microscopic examination (Figure 2). Bortezomib and dexamethasone were prescribed as an initial treatment. After only two cycles of bortezomib and dexamethasone, the patient suffered from uncontrolled infection and renal failure due to disease progression, eventually choosing palliative treatment.

Discussion

Extramedullary disease (EMD) is an uncommon manifestation in multiple myeloma with an estimated incidence at the initial diagnosis of 3 to 5%. It can also occur in relapsed or refractory patients with incidence of 6 to 20%[1]. Myelomatous ascites is unresponsive to treatment, with rapid mortality and poor prognosis[2-4].

Ascites can develop among patients with multiple myeloma at any time[5] and is often associated with portal hypertension caused by hepatic amyloidosis, hepatic infiltration, and heart failure[2,6]. Less frequently, myelomatous ascites can be caused by peritoneal involvement of malignant plasma cells[3,6,7]. Imaging modalities (PET-CT, MRI) have been proposed to detect EMD[1,8]. In this case, myelomatous ascites was indicated by the obvious morphology of plasma cells.

EMD tends to be associated with the IgA subtype. Lemfadli et al.[9] found that 62.5% of patients had IgA myeloma. Myelomatous ascites and pleural effusion without bone involvement are more likely to be associated with IgA subtype[10]. Many case reports[5,11-13] revealed that IgA subtype myeloma was associated with myelomatous ascites.

Table1: Specific investigations for the causes of ascites and multiple myeloma

Special investigations for chronic infection

- Chest x ray: normal
- Sputum AFB: negative
- Ascites fluid for PCR for TB: negative
- Ascites fluid for ADA: 7.7

Special investigations for solid malignancy

- Viral hepatitis panel: negative
- Serum PSA level: negative
- Whole abdomen ultrasonogaphy: negative
- Ascites fluid cytology / cell block: negative for malignancy

Special investigations for hematologic malignancy

- Bone survey: multiple osteolytic lesion
- Ascites fluid analysis: numerous plasma cell
- Serum protein electrophoresis: monoclonal gammopathy
- Immunoglobulin level: IgA 6075.5 mg/dL, IgG 627 mg/dL, IgM < 20 mg/dL
- Kappa free light chain: 23 mg/L
- Lambda free light chain: 16.5 mg/L
- Beta2 microglobulin: 17.77 mg/L
- Immunofixation: IgA with kappa light chain restriction
- Bone marrow biopsy: hypercellular marrow consistent with plasma cell neoplasm with kappa light chain restriction

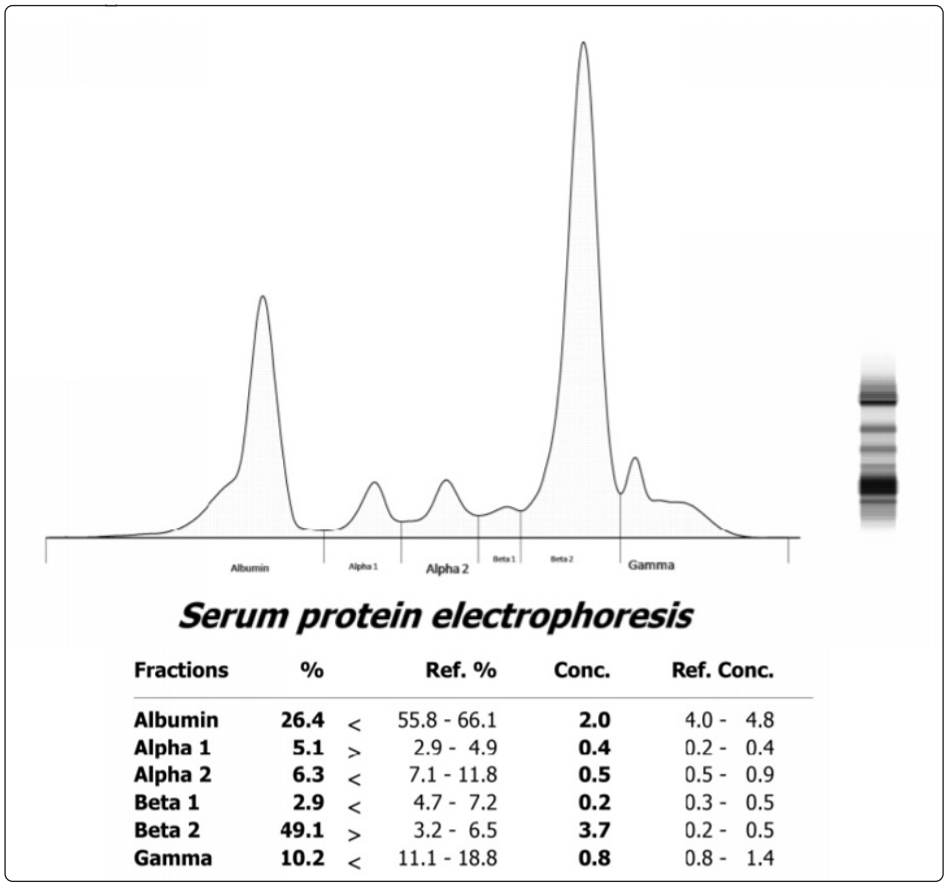

Figure 1 Serum protein electrophoresis showed monoclonal gammopathy (IgA gammopathy).

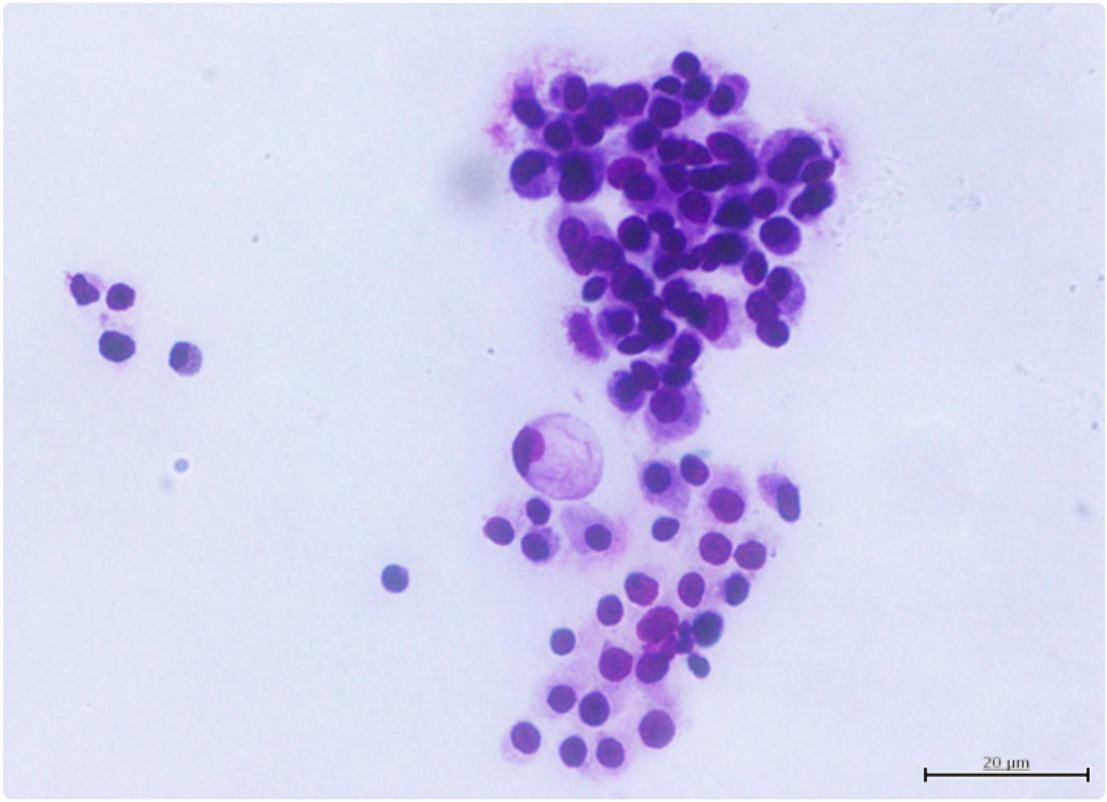

Figure 2 Numerous plasma cells were seen from ascites fluid microscopic examination.

Multiple myeloma cells primarily grow in the bone marrow and depend on the microenvironment for their growth and survival[14]. The appearance of neoplastic plasma cells in the peritoneal cavity suggests alteration of the strong dependence on the bone marrow microenvironment. The mechanisms of EMD are poorly understood but the reduced expression of adhesion molecules, particularly VLA-4 and CD-44[15] may play an important role in independence from the bone marrow micro environment. EMD showed high prevalence for high risk chromosomal abnormalities and a more complex genomic profile[14]. Yadav[16] et al. reported a significant association between t (4;14) and the IgA subtype for multiple myeloma. Unfortunately, the chromosome and genomic profile of the patient could not be determined. From the aggressive clinical presentation, predominant EMD and Ig A subtype, we could assume that the patient had a high risk cytogenetic profile and genetic complexity.

Multiple myeloma with extramedullary involvement is usually refractory to conventional treatment[3,6,9], with no proven effective remedy for this complication. Experts suggest that EMD should be treated as a high risk multiple myeloma[14]. Alegre et al.[17] found that treatment with cytotoxic chemotherapy (VAD regimen) followed by autologous stem cell transplantation improved symptoms, with patients showing remission. One report described a treatment regimen with conventional chemotherapy and intraperitoneal cyclophosphamide infusion in myelomatous ascites that showed no improvement of ascites[4].

Multiple myeloma with EMD has poor prognosis. Jagosky et al. reported a significantly worse progression-free survival and overall survival for patients receiving a diagnosis of EMD[1], while Lemfadli et al.[9] recorded 1.5 to 2 months survival time after diagnosis of complicated ascites. In this study, the patient responded poorly to treatment and survived for three months from the initial diagnosis.

In conclusion, myelomatous ascites is a very rare manifestation, with poor prognosis and no effective treatment. Multiple myeloma should be recognized as a possible cause of ascites.

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