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CASE REPORT

Multiple Myeloma with Pleural Effusion According to Initial Findings

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SUMMARY

Primary malignant myelomatous pleural effusion (PMMPE) occurs in <1% of patients with multiple myeloma (MM) and is diagnosed by the appearance of plasma cells on cytology or by positive flow cytometry. The nucleus-to-cytoplasm ratio is high. In addition, immature plasma cells with the presence of nucleus, Mott cells, and Russell bodies are independent poor prognostic factors. Clinicians should be able to distinguish between PMMPE and secondary pleural effusions because PMMPE is significantly associated with poor prognosis and poor survival. Presently described is a case diagnosed as MM after pleural sampling and parenchymal wedge resection performed with video-assisted thoracoscopic surgery for pleural effusion.

Keywords: Mutiple myeloma; pleural effusion; video-assisted thoracoscopic surgery.

Introduction

Multiple myeloma (MM) is a neoplastic disease caused by a single plasma cell proliferation and is associated with monoclonal immunoglobulin production. MM is a rare disease involving non-reticuloendothelial tissues that can cause pleural effusion. Myelomatous etiology is usually diagnosed if pleural fluid protein electrophoresis demonstrates gammopathy or if atypical plasma cells are present in abundant quantity on pleural fluid cytology.[1] MM accounts for approximately 10% of all hematologic cancers. It usually causes clinical manifestations such as anemia, bone pain, hypercalcemia, renal insufficiency, and infections due to excessive proliferation of immunoglobulins and cytokines with overproduction of IgG and IgA monoclonal proteins. [2] MM diagnosis after pleural effusion is established by the increase of monoclonal proteins on pleural protein electrophoresis, increase of plasma cell quantity in pleural fluid, and presence of atypical plasma cells on pleural biopsy. In this study, parenchymal and pleural involvement in MM was detected in a patient with pleural effusion and the case is presented in the light of the literature.

Case Report

A 64-year-old male patient was admitted to our clinic with complaints of dyspnea and fatigue that had been persistent for a month. Although no remarkable personal or family history was noted, the patient had been smoking 40 packets of cigarettes per year. On physical examination, fever was 36.7 °C, pulse rate was 100 beats/min, respiratory rate was 22 breaths/min, and arterial blood pressure was 130/85 mmHg. In the right hemithorax, matite was detected under the scapula on percussion, whereas auscultation revealed a decrease in

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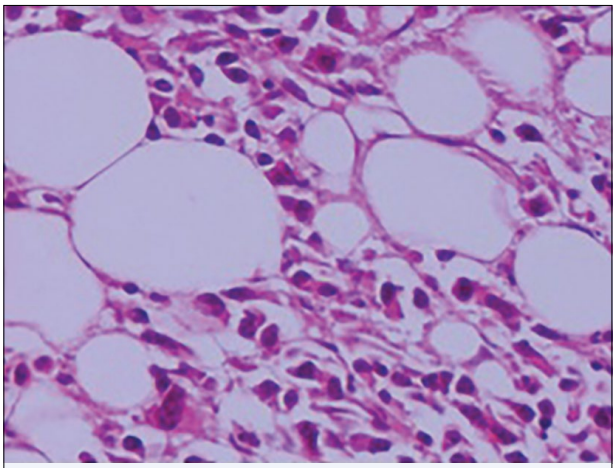

Fig. 1. Density enhancement in the right hemithorax sub-zone of the postero-anterior chest X-ray with pleural fluid.

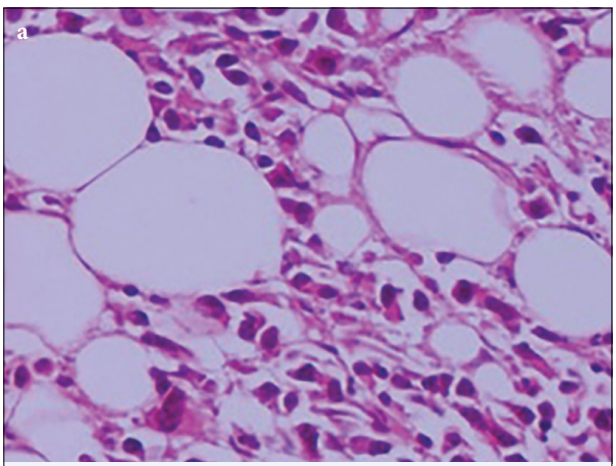

Fig. 2. (a) Hematoxylin–eosin staining. Plasma cells with atypical features at a site where erythrocytes are present.

respiratory sounds in the lower right zone. Postero-anterior chest X-ray revealed pleural effusion in the lower hemisphere of the right hemithorax (Fig. 1). Computed tomography of the thorax showed no parenchymal lesions or pleural and bony lesions. Biochemical parameters were normal. Increased gamma globulin level was observed on serum protein electrophoresis. Sampling was done via thoracentesis. The sample fluid was negative for acid-resistant bacilli, 26% for lymphocytes and 74% for leukocytes. There were 3 malignant cells observed at 500 mm^3 magnification. There was no growth in nonspecific culture. On biochemical examination of the liquid, the following levels were obtained: albumin, 2.4 g/dL (blood: 3.6), total protein 3.02 g/dL

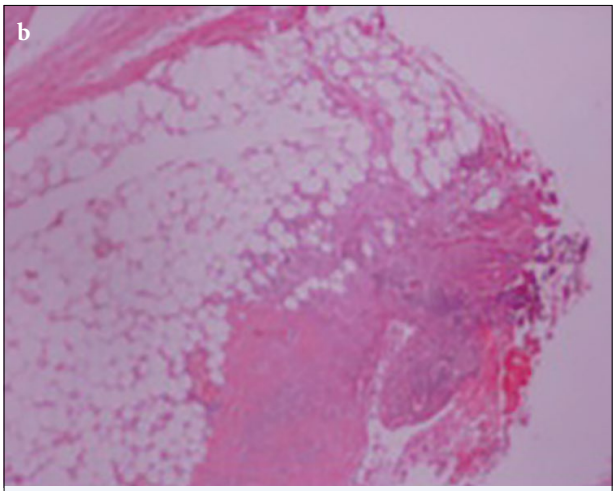

Fig. 2. (b) Atypical plasma cells with concentric nuclei.

(blood: 7.1), LDH 331 U/L (blood: 160), ADA 12.50 U/L (blood: 24.4). When the pathology reported an atypical cell, decision was made to operate. Pleural biopsy and parenchymal wedge with video-assisted thoracoscopic surgery were performed. The pathology result was reported as plasma cell neoplasia. Pleural involvement in MM was reported according to the bone marrow biopsy result (Fig. 2). The patient was directed to the oncology department for systematic chemotherapy. No pathology was observed during the 14-month follow-up.

Discussion

MM is mainly characterized by bone marrow, blood, and monoclonal immunoglobulins in the urine, malignant plasma cells in osteoporosis, and osseous lesions.[3] MM is a neoplastic disease that causes the proliferation of transformed B lymphoid progenitor cells.[4] MM accounts for 1% of all malignancies and approximately 10% of all hematologic cancers. Pleural effusion occurs in approximately 6% of MM patients.[5] MM mainly affects bone marrow cells. But in rare cases, the first finding is pleural effusion.[6] Only pleural involvement is reported in very few patients without cavitary or mass lesions. Lytic lesions are frequently seen with the involvement of the chest wall, mediastinum, or pulmonary parenchyma.[7] In cases of pleural involvement, immunoglobulin is secreted by malignant plasma cells, usually caused by pleural fluid formation due to an increase in colloid osmotic pressure that cannot be absorbed.[8] Approximately 25% of MM cases are of IgA type. However, >50% of cases of multiple myeloma with osteo involvement are of the IgA type and are especially seen in serological spaces.[9] Our case had

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IgG-type MM with pleural involvement and pleural effusion. Causes of pleural effusion in MM include heart failure, renal failure, and amyloidosis. The exclusion of pleural fluid distinguished these cases. Over 10% of the plasma cells in the bone marrow were diagnostic for multiple myeloma. In studies, the diagnostic value of MM plasma infiltration using a pleural biopsy has been very low.[10]

Conclusion

In conclusion, plasma cell neoplasms should be considered in the differential diagnosis of pleural effusions. As a result, MM pleural effusion is very rare and may be the first finding.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

Authorship contributions: Concept – S.B.; Design – S.B.; Supervision – S.K.; Data collection &/or processing – O.D.; Analysis and/or interpretation – L.A.; Literature search – S.K.; Writing – O.D., S.B.; Critical review – Ç.T., V.B.

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