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Mediastinal granulocytic sarcoma

Mediastinal granülositik sarkom

Bahar AKKAYA[1], Esin ÖZEL[1], İhsan KARADOĞAN[2], Hüseyin BEKÖZ[2], Gülten KARPUZOĞLU[1]

Akdeniz University School of Medicine, Pathology[1] and Hematology[2] Departments, ANTALYA

ABSTRACT

Granulocytic sarcoma is an unusual variant of myeloid malignancy in which there is an extramedullary tumor mass composed of myeloblasts or myeloblasts and more mature neutrophils. It rarely occurs in mediastinum and clinically may resemble a mediastinal lymphoma. We report a patient who was initially diagnosed as malignant lymphoma based on the previous biopsy specimen. The diagnosis of granulocytic sarcoma is not difficult with careful histopathologic evaluation and immunohistochemical staining.

Key words: Granulocytic sarcoma, chloroma, myeloid sarcoma

ÖZET

Granülositik sarkom miyeloblast veya daha matür nötrofillerden oluşan miyeloid malignitelerin nadir bir varyantıdır. Mediastende nadiren gelişir ve kliniği lenfomaya benzeyebilir. Bu makalede önceki biyopsi materyalinde lenfoma tanısı almış bir hasta rapor edilmektedir. Granülositik sarkom tanısı dikkatli histopatolojik ve immünhistokimyasal yöntemle zor değildir.

Anahtar sözcükler: Granülositik sarkom, kloroma, miyeloid sarkom

INTRODUCTION

Granulocytic sarcoma (GS), also known as chloroma, myeloid sarcoma and leucosarcoma, is a rare tumor composed of immature myeloid cells. The common sites of involvement include the small intestine, skin, bone and lymph nodes. GS has been reported in liver, spinal cord, gynecologic tract, cerebellum, small bowel and urinary bladder (1-6). Most cases of GS occur during the progression of leukemia. They are usually associated with acute myeloid leukemia and less commonly with blastic transformation of chronic myeloid leukemia and myelodysplastic syndromes. Rarely, these tumors may be observed before the diagnosis of any hematological malignancy. In such cases, granulocytic sarcomas may be misdiagnosed as lymphoma.

We hereby report a case of GS presenting as a mediastinal mass in a 29-year-old woman without a history of leukemia. The case initially diagnosed as malignant lymphoma on the previous biopsy specimen.

CASE REPORT

A 29-year-old woman was admitted to local hospital because of respiratory distress. Radiologic examination revealed a 9,5 cm-sized mediastinal mass. She underwent surgical resection of mediastinal mass. The tumor was diagnosed as diffuse non-Hodgkin, large cell lymphoma. At that time, there was no clinical and laboratory evidence of acute myeloid leukemia or chronic myeloproliferative disease. The patient was treated with CHOP (cyclophosphamide, hydroxydoxorubicin, Oncovin, prednison) and then with palliative chemotherapy. Three months after her initial presentation, she was admitted to Hematology Department of Ak-

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Corresponding Author: Doç. Dr. Bahar Akaya, Akdeniz Üniversitesi Tıp Fakültesi, Patoloji Anabilim Dalı, Antalya

deniz University. The paraffin-embedded blocs were referred to Pathology Department of Akdeniz University for a second opinion. Histologically, there were sheets of immature cells and the cells had round and oval nuclei with scantly cytoplasm. It had a delicate nuclear chromatin pattern with thin, regular nuclear membrane, and one or more small basophilic nucleoli (Figure 1). These cells stained positively with leukocyte common antigen (LCA), CD68, CD43. But antibodies for specific T cells (CD3, CD5, CD2) and B cells (CD20, CD79a) antigens did not stain. Because of CD68 and CD43 positivity, the sections were further stained with CD30, ALK-1 and myeloperoxidase to exclude lymphoma. Myeloperoxidase was positive (Figure 2). AKL-1 and CD30 were negative. No cytoplasmic granules could be recognized in a thin Giemsa section. The tumor was diagnosed as granulocytic sarcoma. The patient had been misdiagnosed as a lymphoma. A bone marrow aspirate and trephine biopsy, taken a month later, showed normal cellularity and no lymphomatous infiltrate.

The bone marrow aspiration showed hypercellularity with diffuse infiltrating blasts. Treatment was started with induction chemotherapy consisting of daunorubicin and cytosinarabinosid. The bone marrow aspirate one month later showed no infiltration. Eight weeks after chemotherapy, she was readmitted with cardiac failure and died of cardiopulmonary arrest.

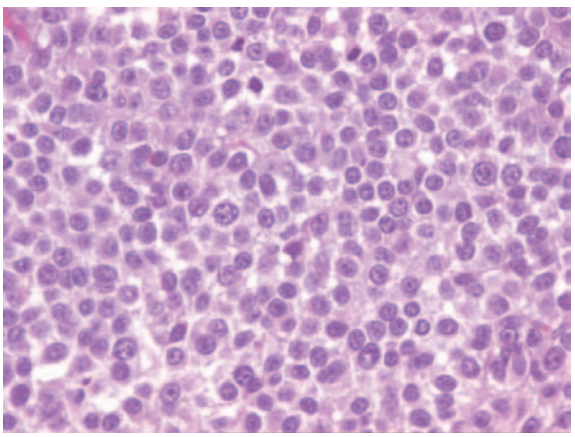

Figure 1. Diffuse and infiltrative population of small round tumor cells show scant granular eosinophilic cytoplasm. (HE x200).

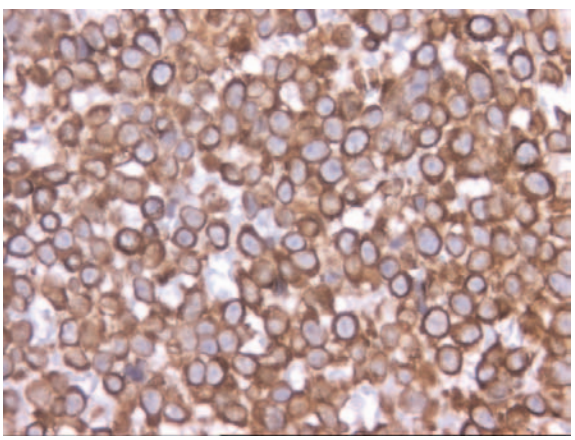

Figure 2. Myeloperoxidase immunoreactivity in tumor cells. (MPO x200).

DISCUSSION

Granulocytic sarcoma is an unusual variant of myeloid malignancy in which there is an extramedullary tumor mass composed of myeloblasts or myeloblasts and more mature neutrophils. GS may occur as an isolated finding or may be associated with acute myeloid leukemia, chronic myeloid leukemia, chronic idiopathic myelofibrosis, hypereosinophilic syndrome, and polycythemia vera (7). GS is reported in 0.7-9.0 percent of patients with acute or chronic myelogenous leukemia (8). The mediastinal mass is an unusual site of presentation and clinically resemble a mediastinal lymphoma (9,10). The diagnosis of GS is not difficult when the tumor is grossly green in color, which is due to the presence of peroxidase in leukemic cells or shows relatively well-differentiated granulocytes in touch prints. However, granulocytic sarcomas occurring as isolated lesions in the absence of some type of leukemia may be misdiagnosed, as a malignant lymphoma-large cell type or poorly differentiated tumors. The higher rate of misdiagnosis is probably a reflection of the rarity of this lesions and low index of suspicion. Histopathologic classification has generally resulted in three levels of differentiation: blastic, imma-

ture, and differentiated. The blastic type is composed primarily of myeloblasts. The myeloblasts have a slight to moderate rim of basophilic cytoplasm, fine nuclear chromatin and two to four nucleoli. Eosinophilic myelocytes are not usually found. The immature type with an intermediate degree of differentiation contains principally myeloblasts and promyelocytes. The differentiated type primarily consists of promyelocytes and cells in their later stages of maturation. The diagnosis of GS in nonleukemic patients is extremely difficult without using immunohistochemical staining. The immunophenotype is identical to that of a myeloid leukemia being negative for B and T cell markers but positive for myeloperoxidase and/or histiocytic markers such as lysozyme or CD68. Similarly, immunoreactivity for CD13, CD15, CD33 is expected in GS but not lymphoma. Other markers which may be positive include CD31, CD34 and CD43 and these can be misleading as they are not lineage specific. For example, CD43 positivity may suggest a T-cell lymphoma but higher index of suspicion for a T-cell lymphoma lacking all other T-cell markers should be maintained. The use of antibodies against CD34, which is expressed in acute leukemias, may provide a useful addition to a panel of antibodies in these cases, facilitating identification of cells of myeloid origin excluding lymphoma (11).

Due to poor fixation and preparation, histopathologic diagnosis is difficult without immunohistochemical staining, nevertheless the correct diagnosis is made possible by a careful examination of cytological details. Imprint preparations of tumor masses may be particularly useful in identifying the myeloid nature of the cells. Auer rods may be found and the myeloblasts may show intense staining with myeloperoxidase cytochemical reaction. However, eosinophilic myelocytes are present in 50% of the cases. Electron microscopic finding of electron-dense granules characteristic of granulocytic cells is considered pathognomonic of GS.

Histopathologists should be aware of the fact that granulocytic sarcoma may occur in unusual extramedullary sites without evidence of bone marrow involvement. If inappropriate treatment is to be avoided, a diagnosis of granulocytic sarcoma should be considered when hemopoietic tumor cells do not stain with conventional antibodies against B- and T-lymphoid cells. Both histochemical and immunohistochemical staining should be performed in such cases to determine whether the cells are of myeloid lineage. A diagnosis of granulocytic sarcoma is not ruled out when bone marrow biopsy specimens show no evidence of leukemic infiltration.

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