Primary Bone Malignant Lymphoma: Radiographic and Magnetic Resonance Images

Norihiko Sugisawa¹, Taku Suzuki¹, Naoki Hiroi¹, Takashi Yamane², Kazuhiko Natori⁴, Hideko Kiguchi³, Yasunobu Kuraishi⁴ and Mariko Higa¹

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A 70-year-old man with a 3-month history of low back pain was admitted to our hospital due to difficulty in walking with pain and swelling in the right knee joint in September 2004. On admission, physical examination revealed a 15 cm mass with fever in the right knee joint. The superficial lymph nodes were not enlarged. The erythrocyte sedimentation rate and soluble interleukin 2 receptor level were 92 mm/h and 977 U/ml, respectively. However, the levels of other tumor markers and immunoglobulin were normal. In the radiography, permeative and moth-eaten bone destruction with pathological fractures in the distal femur was observed (Fig. 1). Magnetic resonance (MR) imaging showed marrow replacement and surrounded by a soft tissue mass in the distal femur (Fig. 2A, B). An open biopsy of the tumor demonstrated proliferation of abnormal lymphoid cells. Immunohistochemical staining revealed that the biopsy specimens were positive for CD20, CD79a and CD5, which are surface markers of B cell lymphocyte (Fig. 3A, B). Other surface markers for T cell lymphoma,

¹ Department of Internal Medicine, Saiseikai Kanagawa-Ken Hospital, Yokohama, ² Department of Radiology, Saiseikai Kanagawa-Ken Hospital, Yokohama, ³ Department of Pathology, Saiseikai Kanagawa-Ken Hospital, Yokohama and ⁴ Division of Hematology and Oncology, Department of Internal Medicine (Omori), Toho University, Tokyo

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Correspondence to Naoki Hiroi, Department of Internal Medicine, Saiseikai Kanagawa-Ken Hospital, 6-6 Tomiya-cho, Kanagawa-ku, Yokohama, Kanagawa 221-8601
Immunohistochemistry of the bone tumor (×1,000). Bone tumor biopsy showed diffuse large B cell lymphocytes, which were positive for CD20 (A) and CD79a (B).

CD3, CD4 and CD56, were negative. We diagnosed diffuse large B cell lymphoma of the femur and treated the patient with combination chemotherapy consisting of cyclophosphamide, doxorubicin, vincristine and prednisolone.

Primary bone malignant lymphoma is uncommon and accounts for less than 5% of all primary bone tumors and less than 1% of all non-Hodgkin’s lymphoma. The femur is the most common site and is affected in 25% of these cases. Although the radiographic appearance of the disease is variable and non-specific, one typical pattern of primary bone malignant lymphoma is a solitary lytic lesion near the end of the long bone that has a permeative pattern. On T1-weighted MR imaging, the bone marrow changes for primary bone lymphoma show low intensity areas. T2-weighted images reveal areas of bright patterns within the bone marrow. For demonstration of marrow changes using MR imaging, T1-weighted pulse sequences are the best compared to other sequences. In general, it is reported that extramedullary lesions which expand from bone malignant lymphoma were found without extensive cortical destruction. The presence of these patterns of plain radiographs and MR images are highly suggestive of malignant lymphoma of bone. Malignant lymphoma responds well to a combination of radiation and chemotherapy, therefore it is important to recognize primary bone lymphoma as a diagnostic possibility.