**CASE REPORT**

Michihito Ishizawa · Hidetoshi Okabe
Keiji Matsumoto · Sinsuke Hukuda · Keiko Hodohara
Shigeru Ota

Anaplastic large cell Ki-1 lymphoma with bone involvement: Report of two cases

Received: 21 October 1994 / Accepted: 12 April 1995

**Abstract** Two cases of anaplastic large cell Ki-1 lymphoma involving bone as the most prominent and initial manifestation are reported. The first patient was a 20-year-old male who had back pain and incomplete paraparesis due to vertebral involvement. The second was a 14-year-old girl, whose first clinical signs were fever of unknown origin and sternum bone pain. Radiologically, skeletal lesions were lytic and destructive. Histopathologically, the tumour cells had pleomorphic bizarre nuclei and abundant basophilic cytoplasm. Immunohistochemically, Ki-1 (CD30) reactivity was strongly positive in both cases. Tumour cells were also CD3, CD4, epithelial membrane antigen and interleukin-2 receptor positive in the first case, and CD10, HLA-DR positive in the second case. The former tumour was considered to be of T-cell lineage and the latter of lymphoid progenitor cell origin. Radiation and chemotherapy were temporarily effective. However, both patients died 14 and 7 months after diagnosis, respectively, due to systemic lymph node involvement. These observations suggest that the prognosis for Ki-1 lymphoma involving bone is poorer than indicated in previous reports.

**Key words** Lymphoma · Large cell · Ki-1 · Bone neoplasms · Prognosis

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**Introduction**

Anaplastic large cell Ki-1 lymphoma is a recently recognized disease entity [10, 17]. The Ki-1 antibody was raised against the Hodgkin's disease cell line L428 [4]. The sites predominantly involved, described in previous reports, are the lymph nodes and the skin [2]. Bone is so rarely involved that only thirteen cases have been reported [3, 4, 7, 12, 15]. Two additional cases of anaplastic large cell Ki-1 lymphoma which were manifest initially and prominently in bone are described in this report.

The prognosis for anaplastic large cell Ki-1 lymphoma has been considered to be relatively favourable even in cases with skeletal involvement. The outcome of our two cases however, indicate that the prognosis is not as good as previous reports have suggested.

**Case reports**

**Case 1**

A 20-year-old male student was admitted to the hospital with low back pain and incomplete paraparesis. Physical examination disclosed swelling of the lymph nodes in bilateral inguinal and axillary and in the left supraclavicular regions. A deep subcutaneous mass in the middle of the back was also noted. Neurological examination revealed muscular weakness of both lower extremities and superficial sensory disturbance below the level of D7. The patella tendon reflex was weakened and ankle reflexes were bush. Babinski reflex was not demonstrated. Urinary incontinence appeared 2 days after admission. Laboratory examinations showed leucocytosis (13000x10⁶/μl), and increased serum C-reactive protein (CRP; 1.7 mg/dl) and lactate dehydrogenase (LDH; 407 IU/l). Human T-cell leukaemia virus-1 serology was negative. Radiographs revealed destructive changes in the L₄ vertebral body and the disappearance of the pedicle shadow at D₇. The myelogram revealed compression of the cauda equina by the tumour at the level of L₄. Magnetic resonance imaging elucidated a neoplastic lesion enhanced by gadolinium at the level of D₇. A myelogram revealed compression of the cauda equina by the tumour at the level of D₇. Malignant lymphoma and metastatic cancer were suspected. Because of increasing paraparesis, posterior decompression and instrumental fixation of the lumbar lesion was performed. An intraoperative histopathological di-
agnosis of malignant lymphoma was made. Postoperative radiation therapy and chemotherapy were performed. Temporarily, both lesions decreased in size and the patient improved neurologically. After several courses of chemotherapy (CHOP: cyclophosphamide, vincristine, adriamycin, prednisone, COP-BLAM III: cyclophosphamide, prednisone, bleomycin, adriamycin, methotrexate) however, recurrence was seen in the paravertebral muscle and cervical lymphadenopathy increased. The patient died 14 months after the initial diagnosis with systemic lymph node involvement.

Case 2
A 14-year-old girl was admitted to the hospital because of low grade fever of unknown origin lasting for 2 months. Frequent nasal bleeding, general malaise and anterior chest wall pain appeared subsequently. Her past and family history were uneventful. On physical examination, her body temperature was 38.2°C, but no superficial lymph node swelling was detectable. Tenderness in the skull and sternum was revealed. Laboratory tests showed increased white cell count (20400), units ESR (77 mm; 1 h/101 mm; 2 h), CRP (8.4 mg/dl) and LDH (1082 IU/l). Bone marrow aspiration of the ilium revealed normal findings. Increased uptake of radioisotope was noted in the skull sternum and pelvis, and tomography showed multiple destructive lesions in the sternum (Fig. 2). Cranial CT revealed erosion of the temporal bone. An open biopsy of the sternum revealed malignant lymphoma. After chemotherapy and irradiation, the fever and osteopaenia subsided for a while. However, a recurrence occurred with subsequent progression to systemic lymph nodes, and the patient died 7 months after diagnosis.

Materials and methods

The biopsy material was fixed in buffered formalin and processed for paraffin embedding. Paraffin sections were stained with haematoxylin and eosin. Immunohistochemical staining was done using the avidin-biotin-peroxidase complex method. Monoclonal an-