Primary Non-Hodgkin’s Lymphoma of the Spine: A Case Report

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A 16-year-old male patient abruptly developed weakness and tremor of the right leg and was unable to stand up two months ago. Lumbar spine radiograph revealed a suspicious, purely osteolytic lesion at the vertebral body of L5. No pathologic fracture was noted. The lesion showed permeative, purely osteolytic bone destruction of the vertebral body of L5 on computed tomography (CT) image. An epidural soft tissue mass at the corresponding level with ventral compression on the thecal sac was also noted. Magnetic resonance (MR) imaging of the lesion was hypointense on T1-weighted images and hyperintense on T2-weighted images. Good contrast enhancement was found on Gadolinium enhanced T1-weighted images. Bone marrow aspiration of the sternum revealed no abnormalities. Tumor was removed by operation and histologically proved to be large cell lymphoma with massive necrosis. Primary non-Hodgkin’s lymphoma of bone is rare, especially in spine. To our knowledge, this is the first report of the MR and CT findings of primary non-Hodgkin’s lymphoma of the spine in a young patient.

Key words: Non-Hodgkin’s lymphoma, Paravertebral soft tissue, Spine, Vertebral body

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DISCUSSION

The L5 vertebral lesion was the only lesion found in this patient after complete work up including CT and MRI of the lumbar spine, chest X-ray, plain X-ray of the extremities, abdominal CT, pelvic CT, bone scan, bone marrow aspiration of the sternum and laboratory study. Most part of the tumor was found to be located in L5 vertebral body with cortical destruction and smaller paravertebral soft tissue involvement, which indicated the tumor arised from bone rather than soft tissue. Primary non-Hodgkin’s lymphoma of spine was diagnosed by operation and pathological proof. The patient received chemotherapy during the following three 3 months and no evidence of recurrence was found within the five year follow up period.

The involvement of bone in non-Hodgkin’s lymphoma is typically a manifestation of a diffuse disease rather than a solitary, primary lesion as in this case. The reported prevalence of skeletal alterations in widespread non-Hodgkin’s lymphoma ranged from 10 to 20 per cent in adults and from 20 to 30 per cent in children [1]. Such alterations generally appear after the presentation of the disease, although bone involvement may appear as part of the initial manifestations, especially in children. In the disseminated form, abnormalities of the axial skeleton is predominate, with frequent involvement of the spine, pelvis, skull, ribs and facial bones [1]. Primary non-Hodgkin’s lymphoma of bone is a rare entity, comprising 3 to 5 per cent of primary malignant bone tumors [2].
Hodgkin’s lymphoma of bone may occur at any age but is extremely rare in the first decade of life. Males are affected more frequently than females with a ratio of three to two [2]. Systemic symptoms and signs are usually absent, while localized pain and swelling may be evident [2]. The lesions occur predominantly in the appendicular skeleton, especially lower extremities [1]. An osteolytic lesion with poorly defined margin in the metaphyseal region of a long tubular bone is the most typical presentation, although short tubular and flat or irregular bones can also be affected [1]. Pathologic fractures and soft tissue masses are common. In 1982, Dosoretz D. et al. reported 33 cases of primary lymphoma of bone [3] and Phillips WC. et al. reported 20 cases of primary lymphoma of bone [4]. Spinal involvement was not found in any of the cases of these two series. To our knowledge, this is the first case report of non-Hodgkin’s lymphoma with the primary lesion in the spine in a young patient shown by MRI.

Primary non-Hodgkin’s lymphoma of bone most often presents as a large destructive or permeative lesion. Cortical destruction with extension into soft tissue is typical [2]. Some radiographic signs are correlated with a poor prognosis of primary lymphoma including pathologic fracture, layering or broken periosteal new bone, cortical breakthrough, soft tissue mass and soft tissue swelling [5]. Plain X-ray is less sensitive in showing the osteolytic bone lesions than MRI and CT images. MRI is better than CT in demonstrating soft tissue extension of the lesion. Sweet et al. reported that the five-year survival rate of primary lymphoma of bone was 44 per cent in 1974 [4]. In out patient, the general condition was good and no local tumor recurrence during the five-year follow-up course. The histological features of primary non-Hodgkin’s lymphoma of bone are identical to those of the conventional, nonosseous forms of non-Hodgkin’s lymphoma. The hallmark characteristic of the lesion is replacement of normal marrow constituents by neoplastic lymphoid tissue.

The differential diagnosis of the primary non-Hodgkin’s lymphoma of the spine in young patients should include Ewing’s sarcoma, eosinophilic granuloma, and osteomyelitis [6]. It is difficult to differentiate primary non-Hodgkin’s lymphoma from Ewing’s sarcoma by routine roentgenography, CT, or MRI. Vertebral plana favors the diagnosis of eosinophilic granuloma, while fever is characteristic of osteomyelitis. Metastasis is uncommon at adolescence. Osteosarcoma is infrequently found in the spine. Primary non-Hodgkin’s lymphoma of the bone also must be differentiated from secondary osseous involvement due to dissemination. Unlike primary non-Hodgkin’s lymphoma, disseminated non-Hodgkin’s lymphoma tends to involve the axial skeleton and, with certain notable exceptions, occurs more frequently in older populations. Disseminated lymphoma is often accompanied by systemic symptoms. Localized therapy in disseminated non-Hodgkin’s lymphoma may be palliative but never curative. Although it is difficult to make the diagnosis of non-Hodgkin’s lymphoma of the spine by imaging, we still have to put it into the differential diagnosis of solitary spinal osteolytic lesion.

In this patient, the prognosis is rather good. After treatment, there is no local tumor recurrence or tumor presentation over the other part of the body during the five-year follow up study course. Continuous follow up for the possibility of local tumor recurrence and dissemination of the disease should be emphasized in this patient.

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原發性脊椎的非霍金氏淋巴瘤：個案報告

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一個16歲的男性最近兩個月右腿無力、發抖以及無法站立。腰椎X光攝影發現第五腰椎椎體有一骨溶性病變，沒有併發骨折，電腦斷層攝影除了發現第五腰椎椎體有一骨溶性病變外，尚有附近軟組織的侵犯。磁振攝影發現這病變在T1加強影像是低訊號，在T2加強影像是高訊號，打顯影劑後有很強的顯影。胸骨穿刺沒有異常發現，手術摘除腫瘤後，病理變化顯示為大細胞型淋巴瘤伴隨大量組織壞死。原發性的非霍金氏淋巴瘤很少見，尤其是在脊椎。以我們所知，這是第一個原發性脊椎非霍金氏淋巴瘤之電腦斷層攝影及磁振攝影影像病例報告。

關鍵詞：原發性非霍金氏淋巴瘤，椎體旁軟組織，脊椎，椎體