CAS CLINIQUE / CASE REPORT

OSSEOUS INVOLVEMENT OF LANGERHANS CELL HISTIOCYTOSIS IN CHILDHOOD

Case Reports

http://www.lebanesemedicaljournal.org/articles/66-3/case5.pdf

Carla EL HABER[1*], Paul Henry TORBEY[1,2]

El Haber C, Torbey PH. Osseous involvement of Langerhans cell histiocytosis in childhood : case reports. J Med Liban 2018 ; 66 (3) : 177-179.

ABSTRACT ● Langerhans cell histiocytosis (LCH) is a rare disease arising from clonal proliferation of Langerhans cells, affecting predominantly children. It can take many forms, from a single eosinophilic granuloma to widespread lesions involving multiple systems and might be life-threatening. Bone is the most common organ involved; osseous involvement can be uni- or multifocal.

We report two cases : a multifocal osseous Langerhans cell histiocytosis involving the 9th left rib, vertebral body of T1 and the left iliac bone; and a unifocal osseous Langerhans cell histiocytosis involving the right femur. Biopsy established the diagnosis in correlation with radiology. The patients received chemotherapy and steroids. Outcome was favorable on follow-up.

Keywords : Langerhans cell histiocytosis, eosinophilic granuloma

El Haber C, Torbey PH. Implication osseuse de l'histiocytose langerhansienne chez les enfants. J Med Liban 2018 ; 66 (3) : 177-179.

RÉSUMÉ ● L'histiocytose des cellules de Langerhans est une maladie rare issue de la prolifération clonale des cellules de Langerhans, affectant principalement les enfants. Elle peut prendre plusieurs formes : soit un granulome éosinophile isolé, soit des lésions étendues impliquant plusieurs systèmes et pouvant menacer la vie. L'os est l'organe le plus fréquemment impliqué, l'atteinte peut être uni- ou multifocale. Nous rapportons un cas d'histiocytose langerhansienne osseuse multifocale, touchant la neuvième côte gauche, le corps vertébral de T1 et l'os iliaque gauche ; et un cas d'histiocytose unifocale touchant le fémur droit. La biopsie osseuse a établi le diagnostic en corrélation avec la radiologie. Les patients ont reçu une chimiothérapie et des corticoïdes. Les résultats et le suivi ont été favorables.

Mots-clés : histiocytose des cellules de Langerhans; granulome éosinophile

INTRODUCTION

Langerhans cell histiocytosis (LCH) is a proliferative disorder of histiocytes that is characterized by a proliferation of abnormal and clonal Langerhans cells in one or more body organs, such as skin, bone, lymph node, lungs, liver, spleen and bone marrow [1]. The disease can occur at any age, though commonly in infancy or early childhood. Bone is the commonest single organ to be involved in childhood LCH; 60% of reported cases affect only bone, including the skull, face and ribs [2,3]. Most patients present with a solitary lesion. Prognostically, it is a confounding disorder with unpredictable course and a wide spectrum of outcomes ranging from spontaneous remissions to spread and death. We report two cases diagnosed with Langerhans cell histiocytosis where radiologic imaging showed an involvement of the skeletal system with multiple osteolytic lesions.

CASE 1

A 10-year-old girl presented to our emergency department with a two-month history of painful palpable lateral left thoracic mass and a limp trailing over three weeks. On physical exam, weight and height were normal for age, no neurologic abnormalities, no skin lesions, no lymphadenopathy, no enlargement of the liver and spleen, no pain on active and passive mobilization of the hips. A chest X-ray showed the presence of a lytic lesion of the lateral arch of the ninth left rib extending over a length of 2.3 cm, a width of 1 cm associated with irregularity and cortical rupture (Figure 1), a lytic lesion and collapse of

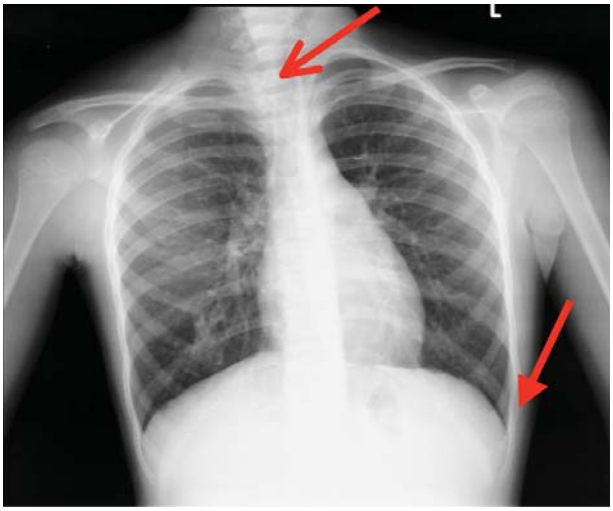

Figure 1. Chest X-ray: Osteolytic lesion of the lateral arch of the ninth left rib and vertebral body of T1

Departments of Pediatrics[1], Pediatric Oncology[2], University Hospital Hôtel-Dieu de France, Beirut, Lebanon.
*Corresponding author: *Carla El Haber, MD*. e-mail: Carla_haber@hotmail.com

the vertebral body of T1 without spinal cord compression. A biopsy of the osteolytic lesion of the 9th rib showed a proliferation of cells bearing the antigen CD1a and S100 protein. On the basis of the clinical and the histological results, the diagnosis of LCH was established.

The bone scintigraphy and pelvis radiographs found a third location in the posterior region of the left iliac bone. Thoracic and abdominal scan showed no involvement of the inner organs or the soft tissues. Laboratory tests were normal.

A chemotherapy with Vinblastin 6 mg/m^2 and prednisolone 40 mg/m^2 was carried out on the basis of the French protocol: *"Protocole de traitement international pour histiocytose langerhansienne groupe de bas risque (LCH 3b), Société francaise d'hémato-immunologie pédiatrique, Groupe d'études des histiocytoses, Société histiocytaire"*. Protocol carried over several months consisting of daily steroids (prednisolone 40 mg/m^2) and weekly Vinblastin 6 mg/m^2 for six weeks followed by six months maintenance therapy (Vinblastin 6 mg/m^2 every three weeks). Decision of chemotherapy was based on intense pain and risk of spinal cord compression due to vertebral lytic lesion.

A two-month follow-up after initiating the treatment showed normal physical exam, no limp, no palpable lateral left thoracic mass.

Radiologically, we noted absence of the osteolytic lesion of the 9th rib, slight regression of 20% of the lacunar formation in the posterior region of the left iliac bone and initiation of osteosclerosis around the lacunar formation of the vertebral body of T1.

After seven months of treatment, we noted a complete disappearance of all osteolytic lesions radiologically. The outcome was favorable clinically and radiologically.

CASE 2

A 13-year-old girl presented to our clinics with a one-month history of right lower limb pain, inability to walk and fatigue.

On physical exam, weight and height were normal for age, no neurologic abnormalities, no skin lesions, no lymphadenopathy, no enlargement of the liver and spleen, pain on active and passive mobilization of the right leg.

A right lower limb magnetic resonance imaging (MRI) showed the presence of a lytic lesion of the shaft and metaphysis of the proximal right femur and cortical rupture (Figure 2).

A biopsy of the osteolytic lesion showing positivity of cells for S100 and CD1a established the diagnosis of LCH.

The bone scintigraphy did not show another osseous location. Laboratory tests were normal.

Vinblastin 6 mg/m^2 and prednisolone 40 mg/m^2 were carried out on the basis of the same protocol carried over several months, consisting of daily steroids (prednisolone 40 mg/m^2) and weekly Vinblastin 6 mg/m^2 for six weeks followed by six months maintenance therapy (Vinblastin 6 mg/m^2 every three weeks).

Follow-up after six months of beginning the treatment showed normal physical exam.

Radiologically, there was a 50% regression of the osteolytic lesion of the diaphysis and metaphysis of the proximal right femur.

One year after the beginning of treatment, there was a complete radiological resolution of the lytic lesion of the shaft and metaphysis of the proximal right femur.

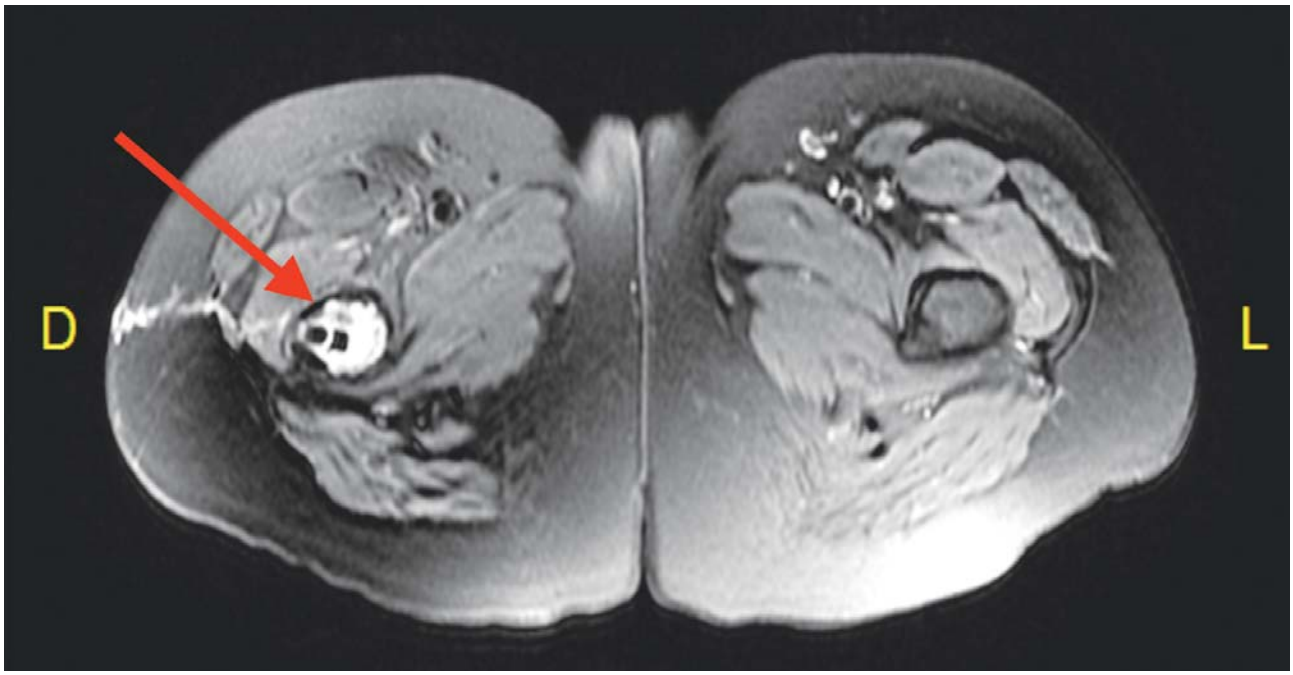

Figure 2. Right lower limb MRI: lytic lesion of the right femur and cortical rupture

DISCUSSION

Langerhans cell histiocytosis (LCH), previously known as histiocytosis X, first described by Lichtenstein in 1953, is a rare disease and generally affects children under 10 years old. The incidence is estimated at 1 in 200 000 per year. In children, it can be diagnosed at any age, from birth to adolescence, with a peak incidence between 1 and 3 years [4], and a sex ratio of 1/2. The histopathology of LCH is a granulomatous lesion containing pathologic Langerhans cells, normal inflammatory cells and multinucleated giant cells.

Bone is the commonest single organ to be involved in childhood LCH (82%) and most patients (90%) present with a solitary osteoloytic lesion. The most common presentation is a single mass lesion on the skull, although all bones may be involved: femur, mandible, pelvis and spine. Patients with bone involvement present with swelling and/or pain that is initially only present at night. LCH has a predilection for flat bones; however, one third of lesions occur in long bones, most commonly the femur.

The diagnostic confirmation is made by histological analysis highlighting the characteristic proliferation of cells bearing the antigen CD1a and S100 protein.

Chest X-ray and standard laboratory tests such as full blood count, liver function tests, and coagulation studies are usually requested in the case of LCH. All imaging techniques (radiographs, CT) contribute to the establishement of the diagnosis. Bone scintigraphy is a very sensitive examination that allows the initial staging and follow-up on treatment of skeletal manifestations.

Prognosis is often regarded as unpredictable at diagnosis. Severe forms may worsen within weeks. Conversely, an eosinophilic granuloma can regress spontaneously or be followed several years later by new bone lesions. Age, number of initial locations, organ dysfunction and the initial response to treatment are the main prognostic factors [4].

Treatment for LCH is varied and depends on the extent of the disease and the degree of the organ involvement. The recommended duration of therapy is usually six months for patients who require chemotherapy for bone involvement and a long term follow-up is necessary. Recurrence has been reported in 12% of patients treated with chemotherapy only.

REFERENCES

1. Mehta B, Amladi S. Langerhans cell histiocytosis presenting as hypopigmented papule. Pediatr Dermatol 2010; 27 (2): 215-17.
2. Howarth DM, Gilchrist GS, Mullan BP, Wiseman GA, Edmonson JH, Schomberg PJ. Langerhans cell histiocytosis: diagnosis, natural history, management, and outcome. Cancer 1999 May 15; 85 (10): 2278-90.
3. Kilpatrick SE, Wenger DE, Gilchrist GS, Shives TC, Wollan PC, Unni KK. Langerhans' cell histiocytosis (histiocytosis X) of bone: A clinicopathologic analysis of 263 pediatric and adult cases. Cancer 1995 Dec 15; 76 (12): 2471-84.
4. Brichard B. Histiocytose de Langerhans: nouveautés concernant la compréhension d'une maladie énigmatique – Langerhans cell histiocytosis. Louvain Med 2000; 119 (6): 127-133.