ORIGINAL RESEARCH PAPER

General Medicine

PATHOLOGICAL FRACTURES IN PRIMARY NON-HODGKIN'S LYMPHOMA OF THE BONE: CASE REPORT

KEY WORDS: Primary non-Hodgkin's lymphoma of bone, Chemotherapy, Pathological fractures

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ABSTRACT

Primary non-Hodgkin's lymphoma of bone (PLB) is a rare entity. Patients generally present with localized bone pain and, less frequently, soft-tissue swelling or a palpable mass. Pathological fracture of the proximal femur and proximal humerus secondary to soft-tissue tumours is well documented in the literature; however, lymphomas presenting primarily at these sites with pathological fracture is unusual. A review of the world literature shows that the incidence of skeletal manifestation from NHL is less than 5%, and in all these cases, bony involvement was reported many years after presentation of the primary cancer. Histopathologically, PLB usually represents diffuse large B-cell lymphoma. We report our experience with a cases of Primary non-Hodgkin's lymphoma of proximal femur and proximal humerus with pathological fracture and their management.

INTRODUCTION

Primary lymphoma of the bone (PLB) is a rare extranodal presentation of non-Hodgkin's lymphoma (NHL). It was first described by Oberling in 1928 [1]. It accounts for approximately 3% of the malignant bone neoplasms and it comprises of less than 5% of all the extranodal non-Hodgkin's lymphomas. An osseous involvement of a lymphoma is generally seen as a part of a multi-system dissemination. Primary lymphoma of the bone can be defined as a lymphoma which occurs in the bone without any evidence of a distal nodal or an extra-nodal tissue involvement [2,3]. PLB can involve any part of the skeleton, but a trend exists in favour of the bones with persistent bone marrow. The femur is the most common site and it is affected in 29% of the cases. The other sites include the pelvis, humerus, head and neck, and the tibia [4]. The clinical presentation depends upon the rate of the tumour cell proliferation and on the initial localization. The patients generally present with localized bone pain and, less frequently, with a soft tissue swelling or a palpable mass. On conventional radiology, PLB has a widely variable imaging manifestation which consists of either a 'lytic destructive pattern' or a 'blastic sclerotic pattern' [5]. Pathological fractures may be present in approximately one quarter of the cases, as were seen in our patient.

Case report

A 45-year-old female presented with fever and productive cough for 2 months, pain and swelling of the right arm of 1 months duration. The pain worsened over the past 15 days, following a minor fall. Following the injury, the patient was unable to use his right upper limb. Clinically, a diffuse swelling was present around the shoulder girdle involving whole right arm [Picture 2] and over the anterior chest wall (Picture 1). Bilateral Supraclavicular lymphnode were palpable. There was no palpable hepatosplenomegaly or other lymphadenopathy. The chest radiograph shows bilateral pleural effusion . Both the WBC and the CRP levels were within the normal range. The only medications which were taken at the time of the presentation were non-steroid anti-inflammatory drugs (NSAIDS). A screening X-ray of his left shoulder showed an osteosclerotic lesion in the proximal humerus with a pathological fracture . Ultrasonograph of abdomen was normal.

CECT Chest ,Abdomen and right upper arm shows multiple enlarged discrete homogenously enhancing nodal masses in bilateral supraclavicular, infrascapular, paracardiac, media stinal, retroperitoneal regions. Large ill defined heterog enously enhancing soft tissue density leison in right anterolateral (24x 12 cm) and left lateral chest wall (10.5 x6.4 cm)causing erosion of underlying ribs with bilateral pleural effusion with left lower lobe collapse. There were multiple osseous leisons involving dorso lumber vertebrae, left iliac bone . Bone window reveals mixed density permeative destructive leison involving right humerous with pathological fracture of proximal end of humerus. The myeloma study was negative. The biopsy report was suggestive of a lymphoproliferative disorder which involved the bone. The tissue was sent for a histopathological examination. The final pathologic diagnosis was a primary lymphoma- NHL, diffuse large B-cell type .

The patient was referred to radiotherapy department for both radiotherapy and systemic chemotherapy and orthopaedics department for management of pathological fracture.. The radiotherapy was performed with 25 Gy to the left shoulder. 6 courses of chemotherapy with the use of the CHOP regimen were planned. A continuous follow-up for the possibility of a local tumour recurrence and dissemination of the disease should be emphasized in these patients.

DISCUSSION

PLB occurs commonly between 20 and 50 years of age and it shows a male preponderance with a male to female ratio of 3:2. The femur (29%) is the most common site, followed by the pelvis (19%), humerus (13%), skull (11%) and the tibia (10%) [4]. Some series have found that the long bones and the flat bones are equally affected [6]. The clinical presentation includes local pain, swelling and sometimes even a pathological fracture. The diagnosis is established by biopsy. The other investigations which are done to establish the diagnosis include a skeletal survey, a bone scan and a bone marrow biopsy. CT scan of the whole abdomen and the chest to assess the lymph node involvement and serum LDH estimation are done as a part of the staging procedure [3]. In the younger patients, the differential diagnosis of PLB mainly includes osteosarcoma, Ewing's sarcoma, and osteomyelitis. In the older patients, bone metastasis of the solid tumours should be considered.

A review of the world literature shows that the incidence of the skeletal manifestation from NHL is less than 5%, and that in all these cases, a bony involvement was reported, many years after the presentation of the primary cancer. The histological

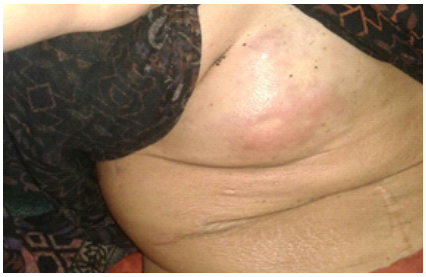
features of primary non-Hodgkin's lymphoma of the bone are identical to those of the conventional, non-osseous forms of non-Hodgkin's lymphoma. The hallmark attribute of the lesion is a replacement of the normal marrow constituents by neoplastic lymphoid tissue; however, the most common histologic subtype is diffuse large B-cell lymphoma [3,6]. The pathological fracture is due to either bone damage by the tumour, radiotherapy, or disuse atrophy. In a large series of 131 patients with primary bone lymphoma, Ramadan et al reported that one third of the patients had lymphoma involvement of the long bones, with pathological fractures occurring in only nine patients [6]. Therefore, our patients illustrated pathological fractures secondary to the lymphoma involvement of the humerus, which is uncommon even in patients with lymphoma involvement of the long bones. On conventional radiology, PLB has a widely variable imaging manifestation that was divided into certain radiographic patterns by Krishan et al., [5] in their evaluation of 20 cases of established primary lymphoma of the bone.

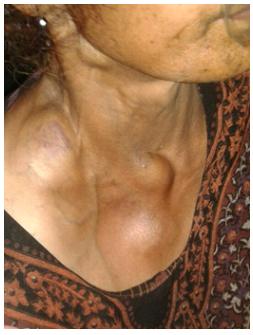
The most common pattern which was noted was the 'lytic destructive pattern', which was reported in around 70% of the cases, followed by the 'blastic sclerotic pattern'. The 'lytic destructive pattern' may present as permeative, motheaten or focal lyses with well-defined margins. A cortical erosion or destruction may occur, but there is usually a little periosteal reaction. Sequestra formation has also been demonstrated by CT in the cases of PLB. An associated soft tissue mass usually heralds a poorer prognosis.

Our patient with the humeral lesion demonstrated radiog raphic findings which were consistent with a 'blastic sclerotic pattern', with a large osteosclerotic lesion, ill-defined radiolucencies with a pathological fracture and a marked soft tissue shadow.

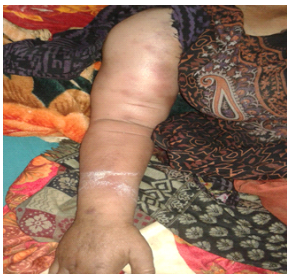
The treatment of PLB typically involves a combination of radiation and chemotherapy. Even with the use of PET [7,8], the assessment of the remission status is rather difficult in PLB; hence, the chemotherapy should involve a sufficient number of treatment cycles, i.e., six to eight cycles. The role of surgery in the treatment of PLB is restricted to biopsies and the management of pathological fractures. The role of radiation in PLB is controversial. In a study which was done by Ramadan et al., [6] the patients with the advanced-stage disease who received chemotherapy plus irradiation, actually had a poorer outcome as compared with those who received chemotherapy alone. A major reason for avoiding radiotherapy, was the risk of the late effects from this treatment modality, especially the delayed bone growth in children and the development of a second cancer within a previously irradiated field [9].

To conclude, PLB is a rare malignant bone tumour with a variable radiographic manifestation. The prognosis, none the less, is much better than that of other malignant bone tumours. Thus, primary lymphoma of the bone should be considered in the differential diagnosis of bony tumours in young patients in the second to fourth decades of life. Chemotherapy, followed by radiotherapy, is the treatment of choice and these are associated with a good outcome. Thus, a high index of suspicion should be maintained for this disease in the patients who present with solitary bone lesions.

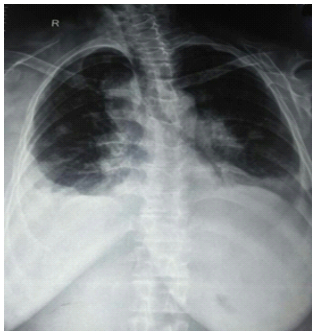




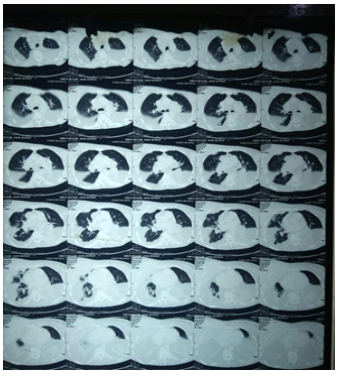
PICTURE 1 (a,b)

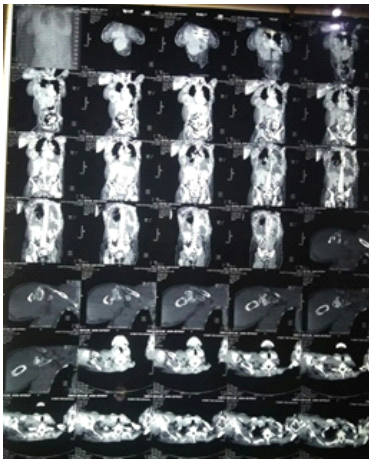


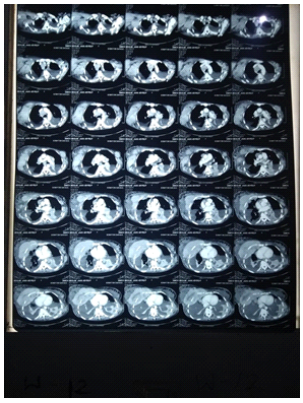
PICTURE 2



Picture 3-X-ray chest showing Bilateral pleural effusion







PICTURE 3 (a,b,c) –CECT Chest and abdomen showing multiple enlarged discrete homogenously enhancing nodal masses in bilateral supraclavicular, infrascapular, paracardiac,mediastinal,retroperitoneal regions.Large ill defined heterogenously enhancing soft tissue density leison in right anterolateral (24x 12 cm) and left lateral chest wall (10.5 x6.4 cm)causing erosion of underlying ribs with bilateral pleural effusion with left lower lobe collapse.

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