

18 Fluoride-fluorodeoxyglucose positron emission tomography in initial staging and response assessment of primary non-Hodgkin lymphoma of the tibia

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ABSTRACT Primary lymphoma of the bone is a rare clinical presentation constituting to <1% of all lymphomas. The long bones are usually involved. Combined treatment with chemotherapy and radiation offers long-term survival. The authors present the role of 18 fluoride-fluorodeoxyglucose positron emission tomography-computerized tomography in initial staging and response assessment in a case of primary diffuse large B cell lymphoma of the tibia.

Keywords: Diffuse large B-cell lymphoma, fludeoxyglucose positron emission tomography, primary bone lymphoma, response assessment

INTRODUCTION

Primary bone lymphoma is a rare, but distinct clinical entity. Both Hodgkin and non-Hodgkin lymphoma (NHL) can involve the bones. The involvement may be solitary or multi-focal. Patients with primary bone lymphoma usually have a good prognosis. Combined treatment with chemotherapy and radiation has good response with the majority of the low-risk patients surviving until 10 years. We present the role of 18 fluoride-fluorodeoxyglucose (18F-FDG) positron emission tomography-computed tomography (18F-FDG PET-CT) in an interesting case of primary diffuse large B cell lymphoma (DLBCL) of the tibia.

CASE REPORT

A 53-year-old-male patient who presented with pain and swelling of the right lower limb was evaluated. A biopsy from the swelling

revealed DLBCL. He was referred to our center for a whole body 18F-FDG PET-CT for initial staging. Pretreatment 18F-FDG PET-CT of the thigh and leg showed intense metabolic activity in a large soft tissue mass arising from the proximal part of right tibia [Figure 1]. No abnormal metabolic activity was noted in the rest of the body.

The patient underwent chemotherapy and local radiation to the involved site and was referred for an 18F-FDG PET-CT 3 months after the completion of treatment. Posttreatment 18F-FDG PET-CT was normal with complete regression of previously noted abnormality [Figure 2].

DISCUSSION

Extra nodal lymphomas are fairly common. Primary bone lymphomas represent approximately 5% of the extranodal lymphomas, majority of which are DLBCL.^[1] Primary bone lymphomas constitute to <1% of all NHL.^[2] Primary Hodgkin lymphoma of the bone is extremely rare.^[3] Most patients present with localized pain, swelling or pathological fracture. They can arise from any bone, but long bones (femurs and tibiae) are the common sites. 18F-FDG PET CT helps in identification of lymph nodal involvement and also differentiation of monostotic from polyostotic involvement by lymphoma. 18F-FDG PET-CT is beneficial in the response assessment and effectiveness of

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DOI:
10.4103/0972-3919.142636

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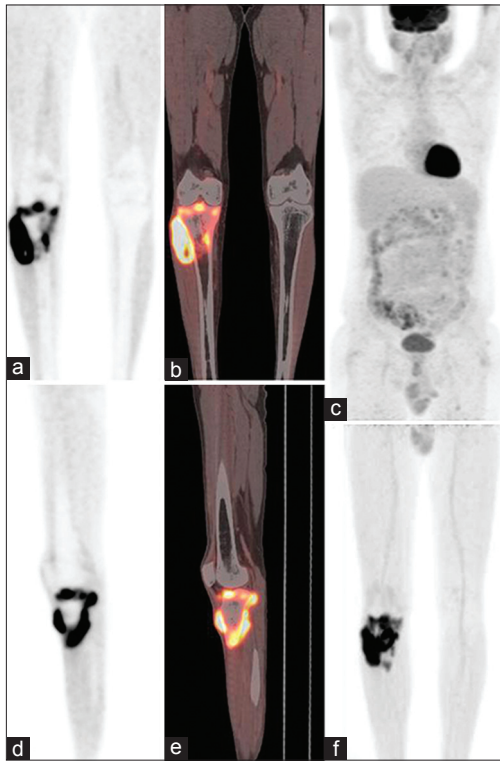


Figure 1: Pretreatment 18 fluoride-fluorodeoxyglucose positron emission tomography-computed tomography (PET-CT) showing intense metabolically active soft tissue lesion noted involving the proximal part of right tibia (coronal PET (a), fused coronal PET CT (b), sagittal PET (d), sagittal fused PET CT (e) and maximum intensity projection (MIP) lower limbs (f)). MIP of the whole body FDG PET (c) showing no abnormal lymph nodes elsewhere in the body

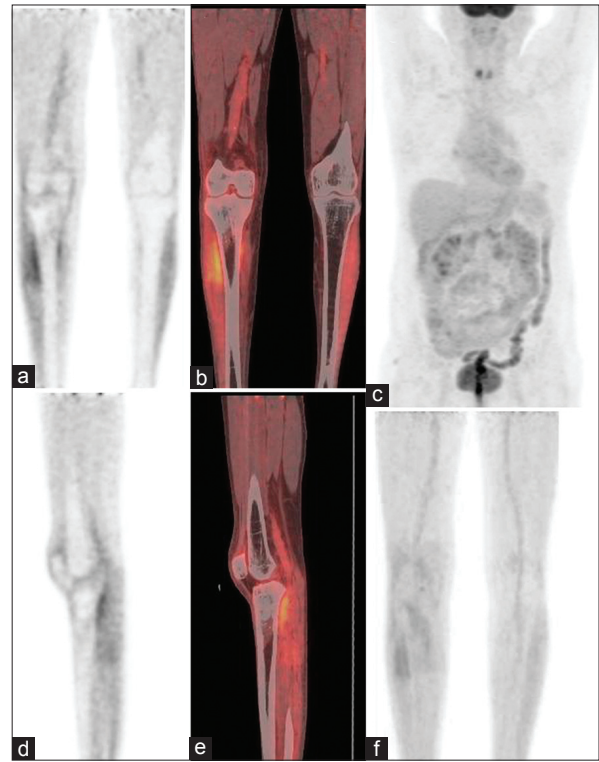


Figure 2: Posttreatment 18 fluoride-fluorodeoxyglucose positron emission tomography-computed tomography (PET-CT) showing complete resolution of metabolic activity in the proximal part of right tibia (coronal PET (a), fused coronal PET CT (b), sagittal PET (d), sagittal fused PET CT (e) and maximum intensity projection (MIP) lower limbs (f)). MIP of the whole body FDG PET (c) showing no abnormal lymph nodes elsewhere in the body. Minimal diffuse FDG uptake in the lower limbs muscles is likely related to local radiotherapy

treatment. Viable tumor lesions are difficult to be differentiate from bone fibrosis and remodeling using conventional modalities. 18F-FDG PET is also more sensitive than magnetic resonance imaging in identifying response.^[4] Primary lymphoma involving the bone usually has an excellent prognosis.^[5] Patients treated with combined modality versus single modality therapy were found to have a superior outcome, with a significantly better survival. The 5-year overall survival for patients treated with combined modality was 95% in one of the largest studies.^[5] Reports on the utility of 18F-FDG PET-CT in primary bone lymphomas have also been published.^[6,7] Role of 18F-FDG PET-CT in initial staging and response assessment in lymphomas has been well-established.^[8,9] This case reports adds to the existing knowledge that 18F-FDG PET-CT is a useful modality in assessment of primary bone lymphoma.

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How to cite this article: Harisankar CB, John J, Lekshmi TP, Warriar A. 18 Fluoride-fluorodeoxyglucose positron emission tomography in initial staging and response assessment of primary non-Hodgkin lymphoma of the tibia. *Indian J Nucl Med* 2014;29:260-1.

Source of Support: Nil. **Conflict of Interest:** None declared.