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Transient Osteoporosis of the Hip on FDG PET/CT

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Abstract

Transient osteoporosis of the hip (TOH) is characterized by bone pain, osteopenia, and bone marrow edema in the absence of trauma. We present a 59 year old man with chronic lymphocytic leukemia (CLL) who underwent ¹⁸F -FDG-PET/CT. ¹⁸F -FDG-PET/CT demonstrated mildly FDG-avid lymph nodes consistent for CLL, as well as FDG-avidity in the right femoral head with corresponding osteopenia, rather than a focal lytic lesion. MR demonstrated bone marrow edema consistent with TOH. TOH is benign and self-limiting. Corresponding imaging may prevent misdiagnosis of benign FDG-avid TOH as other more severe hip processes such as tumors or infection.

Keywords

¹⁸F-FDG; PET/CT; transient osteoporosis of the hip

TOH is characterized by transient hip pain, radiographic osteopenia, and bone marrow edema on MR imaging [1–3]. When sufficient bone loss occurs, TOH may be visualized on radiographs or CT [4]. Characteristic patterns of bone marrow edema on MR are distinctive of TOH [5, 6], and help prevent misdiagnosis as a more aggressive process. TOH has previously been demonstrated to be MDP-avid on bone scintigraphy [4, 7]. In this case we demonstrate that TOH may also be FDG-avid and complicate interpretation of oncologic ¹⁸F -FDG-PET/CT imaging.

TOH is self-limiting, requiring no formal treatment, although anecdotal reports of treatment with alendronate have been reported [8].

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Figure 1.

59-year-old man with chronic lymphocytic leukemia (CLL) presented for ^{18}F -FDG-PET/CT imaging for staging. ^{18}F -FDG-PET/CT demonstrated mildly FDG-avid lymph nodes above and below the diaphragm consistent for CLL (not shown), as well as FDG-avidity in the right femoral head (Figure 1A, arrow). If this FDG-avidity was interpreted as osseous malignancy it may have lead to intensification of therapy. Of note, the CT component of the ^{18}F -FDG-PET/CT (Figure 1B) demonstrated osteopenia in the right femoral head (dashed arrow) as compared to the contralateral left femoral head, not a discrete lytic lesion.

Figure 2.

An MR of the bilateral hips was performed for further evaluation. Coronal T1 MR of the hips (Figure 2A) demonstrates low signal containing areas of preserved high T1 signal representing marrow fat (arrow). The preservation of marrow fat demonstrates that the low signal abnormality is not a mass lesion which would focally replace marrow fat. The corresponding coronal STIR MR of the hips (Figure 2B) demonstrates high T2 signal with intermixed suppressed low signal fat (dashed arrows). This MR appearance is characteristic of bone marrow edema seen in transient osteoporosis of the hip (TOH).