

Fluorine-18 Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography Findings of Post Traumatic Lymphangioma in a Young Adult Male

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The authors report the case of a 34-year-old male, who underwent a fluorine-18 fluoro deoxyglucose (^{18}F -FDG) positron emission tomography/computed tomography (PET/CT) scan 7 years after trauma for the evaluation of multifocal masses in the right iliac and right inguinal areas. CT findings showed multifocal low density masses and ^{18}F -FDG PET revealed slightly increased uptake (maximum standardized uptake value [SUVmax] 3.1). These findings did not exclude the possibility of a benign or malignant lesion. To achieve differential diagnosis, partial surgical excision was performed and a pathologic examination subsequently revealed lymphangioma. Here, the authors describe the ^{18}F -FDG PET/CT findings of a rare case of lymphangioma resulting from trauma.

Key Words: Lymphangioma, Trauma, Positron emission tomography/computed tomography, Fluorodeoxyglucose F18

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INTRODUCTION

Lymphangioma is a benign vascular tumor arising from lymphatic tissues and is rarely encountered in adults [1]. Furthermore, in adults diagnosis is sometimes difficult, especially after trauma [2]. Lymphangiomas resulting from trauma have previously been reported in the upper limbs and head and neck region [3-5]. We present the fluorine-18 fluoro deoxyglucose (^{18}F -FDG) positron emission tomography/computed tomography (PET/CT) findings of lymphangioma in the iliac and inguinal areas of a 34-year-old male.

CASE

A 34-year-old male patient was referred to our hospital for the evaluation of right lower abdominal pain. He had undergone surgery due to a right femoral fracture several years previously. At admission, right lower quadrant

tenderness was noted on palpation. Laboratory tests revealed leukocytosis (white blood cell count 132,600/ μL) and an elevated C-reactive protein level (1.161 mg/dL). Tumor marker findings were normal.

Plain radiography failed to detect any abnormal lesion. However, abdominal CT showed multiple hypodense cystic masses in the right iliac and right inguinal areas. ^{18}F -FDG PET/CT (Discovery VCT; GE Medical Systems, Milwaukee, WI, USA) was performed for differential diagnosis, and multiple low density masses with slightly increased ^{18}F -FDG uptake (maximum standardized uptake value [SUVmax] 3.1) were observed in the right iliac and inguinal areas (Fig. 1).

The patient underwent partial excisional biopsy and pathologic examination revealed lymphangioma (Fig. 2). He subsequently recovered entirely during hospitalization and laboratory tests were within normal limits at the time of discharge.

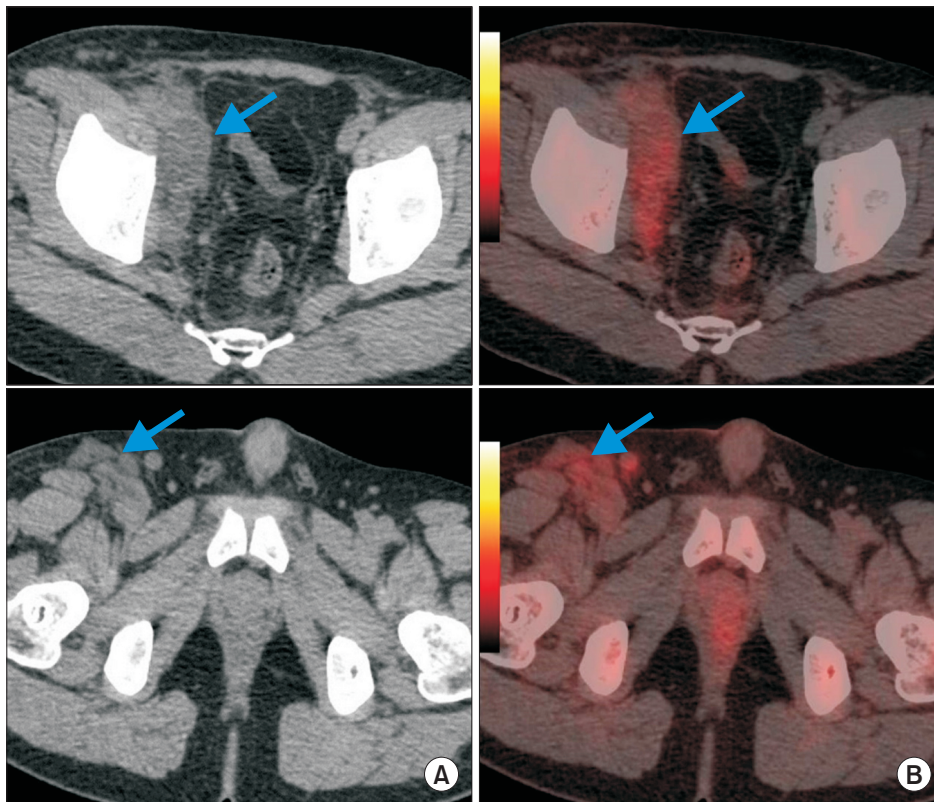


Fig. 1. Positron emission tomography/computed tomography (PET/CT) image showing multifocal low density masses on CT in the right iliac and inguinal areas (A) and mildly increased the fluorine-18 fluoro deoxyglucose uptake (maximum standardized uptake value [SUVmax] 3.1) on the fusion image (B).

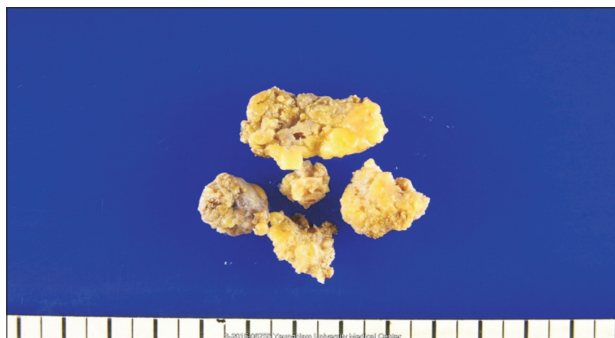


Fig. 2. Gross photograph of lymphangiomas of the inguinal lymph node after excision.

DISCUSSION

Lymphangiomas are rare benign lymphatic malformations and result from a failure of the lymphatic system to communicate with the venous system, though the cause of this failure has not been established [6,7]. Lymphangiomas may be categorized into three subtypes, that is, into simple (formed by lymphatic capillaries), cavernous, and cystic subtypes [8], although a fourth subtype, hemangiolymphangioma, is also recognized [9].

Suk et al. [10] demonstrated that the etiology of lymphangioma in adults was likely due to delayed

proliferation of cell rests. Takahashi et al. [11] described that during proliferation several growth factors may be involved, such as basic fibroblast growth factor, vascular endothelial growth factor, proteases, and E-selectin. In adults, cell rest proliferation follows an external stimulus, such as trauma or infection [12]. In our patient, the causal factor may have been a previous surgery for right femoral fracture.

The diagnosis of lymphangioma is sometimes difficult in adults, especially when it results from trauma. Imaging modalities, such as ultrasonography and magnetic resonance imaging, may be helpful during diagnosis and preoperative staging [13]. On T2 weighted images, lymphangiomas exhibit high signal intensities [8], and previous studies have described lymphangiomas in the spleen, lung, and retroperitoneum mimicking malignancy on ¹⁸F-FDG PET/CT images [14-16]. To the best of our knowledge, this is the first report to describe the PET/CT findings of lymphangioma in the iliac and inguinal areas. In our case, slightly increased ¹⁸F-FDG accumulation was noted, which suggests that the probable cause was lymphocyte and fluid infiltration into expanded lymphatic vessels.

Lymphangiomas are usually treated for cosmetic reasons because they present no risk of malignancy. Thus, the need for surgical excision must be based on considerations of presenting clinical features. Other treatments include

needle aspiration, incision and drainage, sclerotherapy, and laser or radiofrequency ablation. However, complete surgical excision is sometimes difficult because lymphatic channels invade adjacent tissues. Recurrence has been reported to occur in 10%-15% of patients within 9 months

of surgery [2].

We report the ¹⁸F-FDG PET/CT findings in lymphangioma resulting from trauma, and recommend this disease entity be considered when ¹⁸F-FDG PET/CT shows abnormal lymph node uptake.

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