Erythema nodosum-like skin lesions associated with Behçet's disease show ^{18}F-fluorodeoxyglucose uptake on PET/CT

Sirs,

We report here a case of a patient with refractory Behçet's disease (BD), who presented erythema nodosum-like skin lesions showing ^{18}F-fluorodeoxyglucose (FDG) uptake on a whole body FDG positron emission tomography (PET)/computed tomography (CT).

A 47-year-old Korean woman presented to our department with multiple erythematous tender nodules on both legs that had progressed over a one-year period. The patient had a history of recurrent oral ulcerations, which had persisted for over ten years, panuveitis of her left eye, which had been diagnosed seven years prior, and arthralgias on both knees and ankles for over a year. On her initial visitation, laboratory tests including complete blood count, blood glucose, renal and liver function tests, erythrocyte sedimentation rate, C-reactive protein, antistreptolysin O titers, rheumatoid factor, anti-cyclic citrullinated peptide antibodies, antinuclear antibodies, venereal disease research laboratory tests, an interferon-γ release assay using QuantiFERON tuberculosis Gold (QFT-G; Cellestis Inc, Valencia, CA), and HLA B51 genotyping were performed. Results were unremarkable, including negative HLA B51 genotyping, with the exception of an elevated ESR of 38 mm/hour (normal range, ≤20 mm/hour). CT of both lower extremities was performed to evaluate underlying deep vein thrombosis; there were no remarkable findings. Furthermore, there were no definite intestinal ulcerations upon colonoscopy, which was performed to exclude the possibility of gastrointestinal tract involvement because the patient presented with lower abdominal pain with loose stool. After being diagnosed with BD according to the diagnostic criteria outlined by the International Study Group for BD (1), the patient was treated with systemic corticosteroids, colchicine, pentoxifylline, rebamipide, azathioprine, aceclofenac, and aspirin. However, the skin lesions on both legs recurred frequently, and severe swelling of the patient's legs was observed.

After obtaining informed consent, a whole body FDG PET/CT scan was performed to exclude the possibility of large-vessel vasculitis and associated occult malignancies. Multifocal FDG uptake was detected in the upper thighs and lower extremities (Fig. 1). In addition, diffuse and mild FDG uptake was identified in the bilateral knee and ankle joints, suggestive of arthritis. However, no remarkable uptake was observed in the oropharynx, genital area, or iliocecal area of the intestine, which correlated with the clinical manifestations of active inflammatory processes and the colonoscopy results. A quantitative analysis using the standardised uptake value (SUV) was performed, and the uptake index, the ratio of maximum lesional SUV to mean liver SUV, was calculated and is shown in Table I. A biopsy specimen was obtained from an erythema nodosum-like skin lesion that showed FDG uptake on PET/CT to exclude subcutaneous lymphomas and was found to have the characteristics of erythema nodosum.

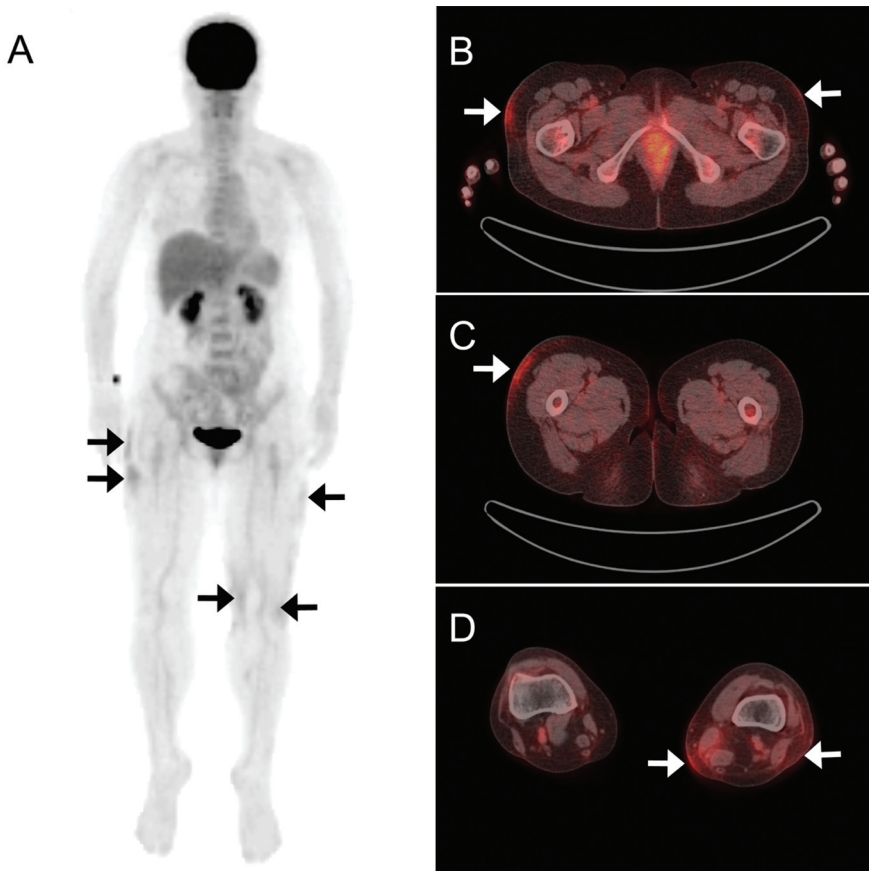

Fig. 1. (**A**) An ^{18}F-fluorodeoxyglucose (FDG) positron emission tomography (coronal view of the 3D reconstructed image) scan showing multifocal FDG uptake in the upper thighs and lower extremities (arrows) and diffuse FDG uptake in both knee joints. ^{18}F-fluorodeoxyglucose (FDG) positron emission tomography/computed tomography images showing focal cutaneous FDG uptake by erythema nodosum-like skin lesions (arrows) extending to the subcutaneous fat layer on the (**B** and **C**) upper thighs, and (**D**) around the knee joint.

Table I. Quantitative analysis using the standardised uptake value (SUV) of ^{18}F-fluorodeoxyglucose.

Site	Maximum lesional SUV	Uptake intensity*
Erythema nodosum-like skin lesions		
Upper thigh (right)	2.39	0.90
Thigh (left)	1.25	0.47
Around the knee joints (left)	1.85	0.70

*Uptake index refers to the ratio of maximum lesional SUV to mean liver SUV; mean liver SUV=2.65.

BD is a chronic, multisystemic autoimmune or autoinflammatory vasculitis that theoretically affects all sizes and types of blood vessels. To date, there have been few reports describing the clinical efficacy of using FDG PET or PET/CT in BD patients. Recently, our study group reported eight BD patients who underwent FDG PET scans to evaluate the cardiovascular presentations associated with BD (2). According to our previous study (2), the median quantitative FDG uptake index was 1.46 (range 0.58–2.61), and FDG uptake was noted in multiple pseudoaneurysms, aortitis, and arteritis associated with aortic regurgitation and aneurysmatic dilatation of the sinus of Valsalva, atherosclerotic changes of the proximal ascending aorta associated with aortic regurgitation, and multiple pulmonary artery aneurysms.

FDG PET or PET/CT evaluation has not been emphasised for associated mucocutaneous and articular inflammatory processes, despite the high prevalence of these conditions. We demonstrated in a previous study that FDG uptake reflected inflammatory activity in the retromandibular region

of the oropharynx, the genital area, and the left tibiofibular joint in one BD patient (3). Although erythema nodosum-like skin lesions or pseudofolliculitis are the most frequently occurring major cutaneous symptoms of BD, there is a lack of FDG PET or PET/CT data for erythema nodosum-like skin lesions in BD patients.

Cheong *et al*. (4). described a patient with non-Hodgkin lymphoma who developed a biopsy-indicated erythema nodosum that showed FDG uptake in an FDG PET scan. These authors emphasised that erythema nodosum can result in false-positive FDG PET interpretation when trying to detect underlying malignancies, because erythema nodosum shows increased FDG uptake (4). Additionally, BD associated with solid or haematologic malignancies is commonly reported. Therefore, we suggest that FDG PET or PET/CT data for erythema nodosum or erythema nodosum-like skin lesions should be collected, even though these skin lesions can usually be diagnosed through inspection and skin biopsies. Although our report does not indicate that FDG PET or PET/CT is necessary for BD patients, FDG PET or PET/CT, which have the ability to scan the entire body, may have clinical value as a baseline workup study for BD if there is a suspicion of associated malignancy.

S.B. Cho, *MD*[1]
S. Cho, *MD*[1]
J.-H. Lee, *MD*[2]
J.D. Lee, *MD, PhD*[2]
D. Bang, *MD, PhD*[1]

[1]Department of Dermatology and Cutaneous Biology Research Institute, [2]Division of Nuclear Medicine, Department of Diagnostic Radiology, Yonsei University College of Medicine, Seoul, Korea.

PAddress correspondence and reprint requests to: Dongsik Bang, MD, PhD, Department of Dermatology and Cutaneous Biology Research Institute, Yonsei University College of Medicine, 250 Seongsanno, Seodaemoon-gu, Seoul, 120-752, Korea. E-mail: dbang@yuhs.ac.

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