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Case Report

Active herpes zoster infection with cutaneous manifestation and adenopathy on FDG PET/CT

Antoine Wadih MD[a,*], *Patrice K. Rehm MD*[a], *Chunli Deng MD*[a], *Michael Douvas MD*[b,c]

[a] *Division of Nuclear Radiology, University of Virginia Medical Center, Charlottesville, VA, USA*
[b] *Division of Hematology, University of Virginia Medical Center, Charlottesville, VA, USA*
[c] *Division of Oncology, University of Virginia Medical Center, Charlottesville, VA, USA*

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ABSTRACT

We report a patient with history of Hodgkin lymphoma. Six months after treatment, 2-deoxy-2-[18F]fluoro-D-glucose positron emission tomography and/or computed tomography ([18F] FDG PET/CT) scan showed abnormal uptake in right axillary lymph nodes concerning for recurrence. In addition, PET/CT showed a new hypermetabolic skin lesion overlying the right scapula. Clinical evaluation was consistent with shingles, and the patient was treated with valacyclovir. Subsequent PET/CT scan was normal with no evidence of lymphoma. Although there have been reported cases of abnormal FDG in nodes or in skin due to herpes zoster, our case is unique in the literature in that the PET/CT demonstrates abnormalities involving both the skin and associated lymph nodes. The possibility of false positive uptake, not because of recurrent malignancy, must always be considered when abnormal FDG uptake is noted in the follow-up of oncology patients. Careful review of the scan and correlation with clinical findings can avoid false positive interpretation and facilitate patient management.

Case report

A 26-year-old woman diagnosed with stage IIb Hodgkin lymphoma with unfavorable features completed chemotherapy and subsequent 2-deoxy-2-[18F]fluoro-D-glucose positron emission tomography and/or computed tomography (FDG PET/CT) showed complete treatment response. Six months later, PET/CT showed new right axillary adenopathy with abnormal FDG uptake, which was concerning for lymphoma recurrence (Figs. 1 and 2). In addition, there was also subtle but abnormal FDG uptake in the skin overlying the right scapula (Figs. 1 and 2). On physical examination, the patient had a painful and pruritic rash on her right breast, underarm, and shoulder blade. The treating oncologist made the diagnosis of

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* *Corresponding author.*
E-mail address: antoine.wadih@gmail.com (A. Wadih).

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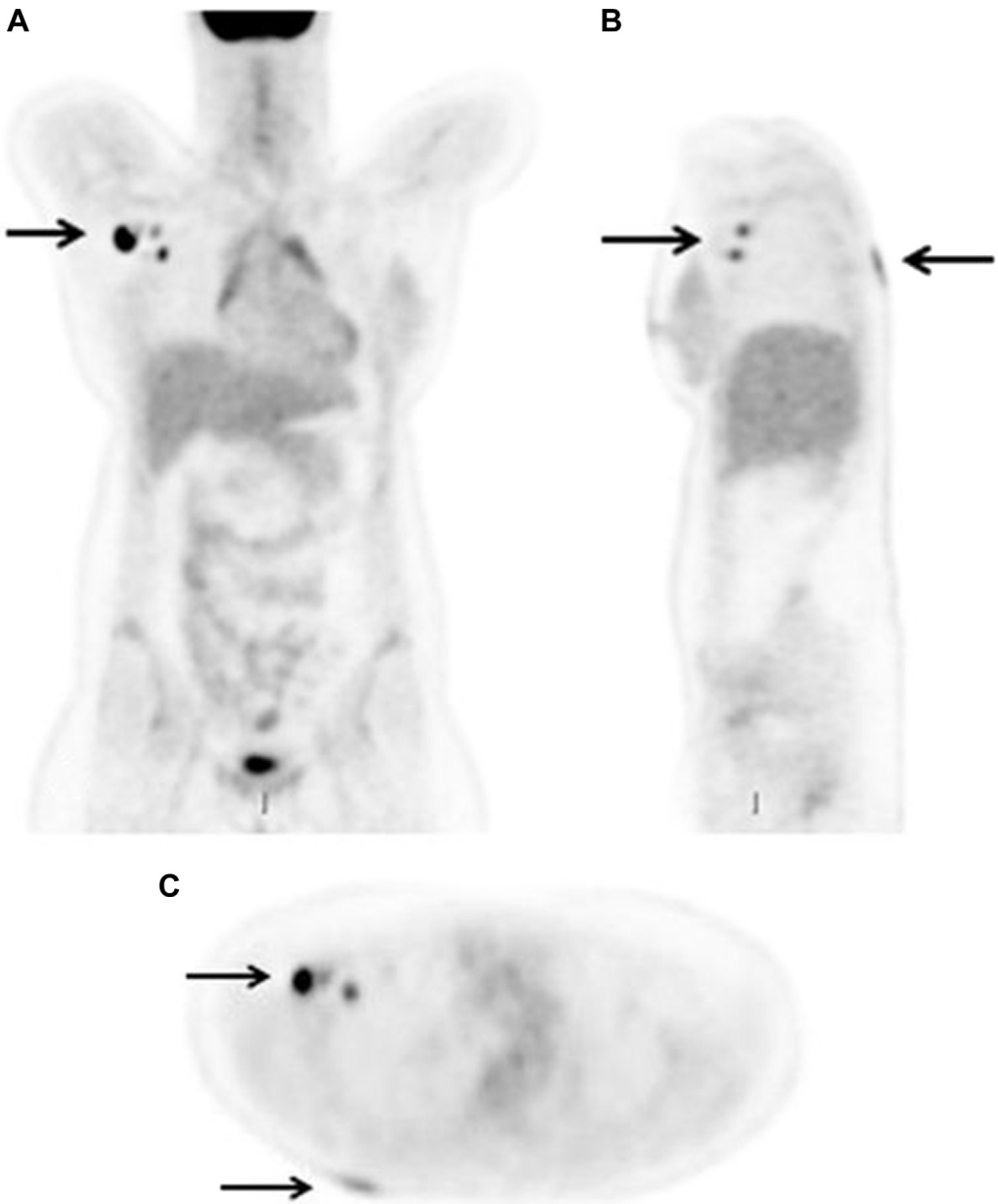

Fig. 1 – Coronal (A), sagittal (B), and axial (C) attenuation-corrected 2-deoxy-2-[18F]fluoro-D-glucose (FDG) positron emission tomography images showing the right axillary adenopathy with significant increased FDG uptake and the focal hypermetabolic skin lesion overlying the right scapula. The arrows point to the abnormal uptake in the right axilla and skin.

shingles, and the patient was treated with valacyclovir. Subsequent PET/CT performed after 4 months after valacyclovir therapy showed resolution of the skin lesion and normal appearance of the right axillary lymph nodes, which correlated with clinical resolution of shingles, with minimal scarring in the area of prior rash.

Discussion

FDG PET/CT is the imaging technique of choice for staging and management of lymphoma patients [1] because of its sensitivity, even in nonenlarged lymph nodes. Because it provides an in vivo biodistribution of glucose metabolism, abnormal accumulation of FDG raises the possibility of lymphomatous involvement. However, abnormal FDG uptake is not specific to malignancy, and inflammatory or infectious processes must be considered as well. In our patient, the additional finding of abnormal skin uptake of FDG in association with clinically evident rash resulted in the correct diagnosis of herpes zoster.

Herpes zoster or shingles results from reactivation of the varicella zoster virus previously acquired through varicella (or chickenpox) infection. After the primary disease, the virus enters a latent state and remains dormant in the dorsal root and cranial nerve ganglia [2]. Reactivation of the virus depends on the host's immunity, particularly the varicella zoster virus–specific cell-mediated immunity [2]. Reported triggering

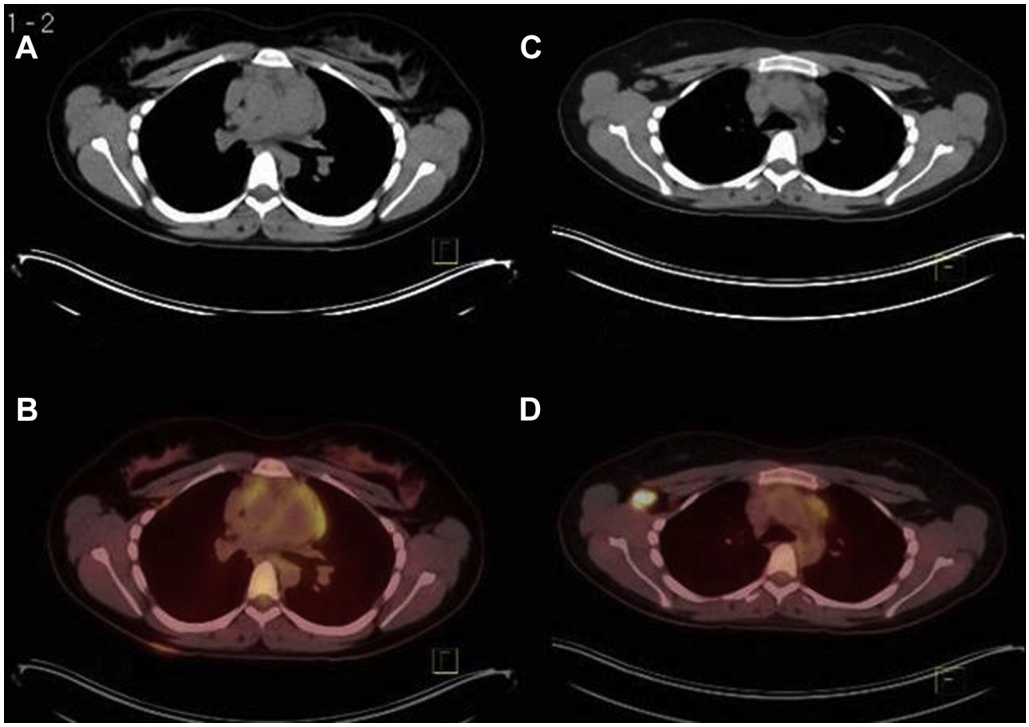

Fig. 2 – Axial computed tomography (CT) and fused positron emission tomography/CT images of the chest showing focal skin thickening and increased 2-deoxy-2-[18F]fluoro-D-glucose uptake overlying the right scapula (A, B) in addition to the hypermetabolic right axillary adenopathy (C, D).

factors include trauma, sunburn, stress, old age, and most commonly, immune suppression [2] such as patients with human immunodeficiency virus, transplant patients, or patients treated with chemotherapy, like this patient. The clinical manifestations of Herpes zoster include skin rash and acute neuritis usually confined to a specific dermatome. A wide range of complications can occur if the disease is not detected and treated rapidly particularly in immunocompromised patients.

Herpes zoster is primarily a clinical diagnosis, but may be evident on imaging studies. Herpes zoster can present on PET/CT as focal skin lesions and/or reactive lymph node enlargement with significant FDG uptake. An important radiologic manifestation that is not frequently stressed is local reactive adenopathy. The lymph node enlargement with abnormal FDG uptake reflects local viral proliferation with secondary T-cell and macrophage activation [3]. Abnormal nodal uptake can be easily misinterpreted as lymphomatous infiltrates in appropriate clinical scenarios such as our case. PET/CT may show hypermetabolic skin lesions in a dermatomal distribution correlating with herpes zoster eruptions [4], but the skin manifestations are often difficult to appreciate on PET/CT. To our knowledge, few FDG PET/CT reports of skin abnormality [5,6] or reactive lymph node enlargement [3,7] due to herpes zoster have been published. Our case is unique by the fact that both nodal and skin findings in the same patient are demonstrated on PET/CT.

The PET/CT on this patient case demonstrates FDG abnormalities involving both the skin and associated lymph nodes. When only hypermetabolic lymph node enlargement is present, findings may suggest lymphomatous nodes in a patient with history of lymphoma. Radiologists should carefully evaluate for subtle scan findings, such as skin lesions and correlate with the patient's clinical status to avoid false positive interpretation of recurrent lymphoma and contribute to appropriate patient management, in this case, therapy for herpes zoster. Clinical correlation is of utmost importance to make the proper diagnosis and spare the patient invasive procedures and improper management.

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