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LETTER / *Cancer imaging*

^{18}F-FDG PET/CT imaging findings of extensive neurolymphomatosis as a relapse of diffuse large B cell lymphoma

Keywords Neurolymphomatosis; Diffuse large B cell lymphoma; 18F-FDG PET/CT; Lymphoid malignancy; Human immunodeficiency virus (HIV)

Dear editor,

Neurolymphomatosis is a rare complication of diffuse large B cell lymphoma (DLBCL). We report the imaging findings obtained at ^{18}F-fluorodeoxyglucose (^{18}F-FDG) positron emission tomography/computed tomography (PET/CT) of diffuse neurolymphomatosis as a relapse of DLBCL in a HIV-infected patient.

A 70-year-old man with untreated human immunodeficiency virus (HIV) infection complained of fever, asthenia and weight loss. He was diagnosed with a stage IV DLBCL with cardiac, nodal, renal and bone marrow involvement as evidenced by multiple hypermetabolic foci on ^{18}F-FDG PET/CT examination. Histopathological analysis of biopsy specimens obtained from bony femoral lesion confirmed the diagnosis of DLBCL. Because of high HIV viral load (250,000 copies/mL) and low CD4+ cell count (5/mm^3), the patient received 6 cycles of CHOP (cyclophosphamide + doxorubicin vincristine + prednisolone) without rituximab. At the end of chemotherapy a complete metabolic response was observed on 18-FDG-PET/CT, as well as almost disappearance of cardiac involvement on cardiac CT. Two months later, he complained of bilateral sciatica with sensorimotor deficit. The CD4+ cell count was < 100/mm^3 but the HIV viral load has dropped to 354 copies/mL. ^{18}F-FDG PET/CT examination revealed extensive and intense ^{18}F-FDG uptake along all the spinal nerve roots from thoracic to lumbosacral vertebrae and newly developed bony and pulmonary lesions (Fig. 1). MR imaging of the spine obtained after intravenous administration of a gadolinium

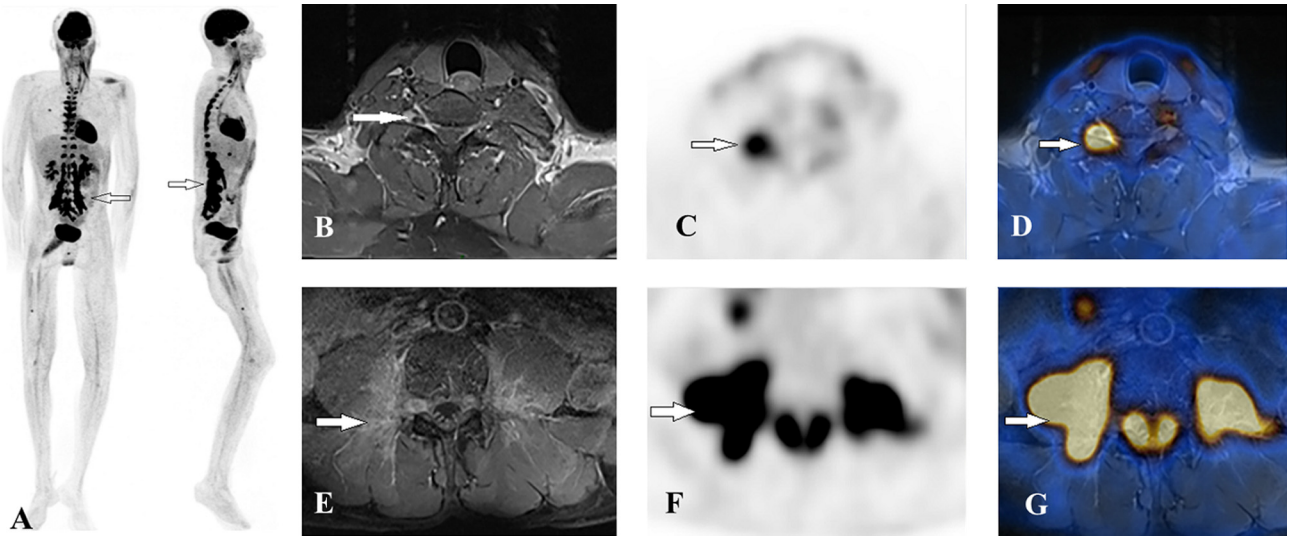

Figure 1. 70-year-old man with untreated HIV infection presenting with diffuse neurolymphomatosis as a relapse of diffuse large B cell lymphoma. A. ^{18}F-FDG PET/CT images in maximum intensity projection show extensive and intense ^{18}F-FDG uptake along spinal nerve roots (arrows) from thoracic to lumbosacral vertebrae. B. Fat-suppressed T1-weighted MR image obtained in the axial plane after intravenous administration of a gadolinium chelate shows enhancement and thickening of right cervical root (arrow) at the level of the 6th cervical vertebra. C. ^{18}F-FDG PET/CT image in the axial plane shows increased ^{18}F-FDG uptake of right cervical foraminal root (arrow) at the same level than in B. D. Fused image from ^{18}F-FDG PET/CT and MR data confirms cervical foraminal root location. E. Fat-suppressed T1-weighted MR image obtained in the axial plane after intravenous administration of a gadolinium chelate shows bilateral enhancement and thickening of lumbar roots (arrow) in their foraminal and extra-foraminal portions at the level of the third lumbar vertebra. F. ^{18}F-FDG PET/CT image in the axial plane shows increased 18F-FDG uptake of lumbar roots (arrow) in their foraminal and extra-foraminal at the same level than in E. G. Fused image from 18F-FDG PET/CT and MR data confirms lumbar foraminal roots location.

chelate showed bilateral enhancement and thickening of cervical and lumbar nerve roots in their foraminal and extra-foraminal portions corresponding to increased cervical foraminal uptake of 18F-FDG and hypermetabolic infiltration of paravertebral soft tissue on PET/CT images. Relapsing DLBCL was highly suspected on the basis of MRI findings. After a second line treatment with R-DHAP (rituximab + dexamethasone + high-dosecytarabine + cisplatin), ^{18}-FDG-PET/CT showed a complete response after two cycles concomitantly to full recovery of neurologic symptoms.

Our observation illustrates the major role of ^{18}F-FDG-PET/CT to detect unusual sites of involvement in patients with diffuse neurolymphomatosis as a relapse from DLBCL. While several cases of localized or multifocal neurolymphomatosis detected on ^{18}F-FDG-PET/CT have been reported [1—3], our observation corresponds to an extensive neurolymphomatosis, affecting all the spinal nerve roots bilaterally, from cervical to lumbar and lumbosacral plexuses. This diffuse involvement is probably due to the severe immunodeficiency in this HIV-infected patient combined with incomplete first line chemotherapy. Systemic DLBCL developed in HIV-infected patient often show findings consistent with high-risk tumor with an advanced stage at the time of diagnosis and frequently extranodal involvement, which more frequently affects the central nervous system, bone marrow or gastrointestinal tract.

Authorship contributions

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Disclosure of interest

The authors declare that they have no competing interest.

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