

Imaging by ^{18}F -FDG PET/CT of diffuse large B-cell lymphoma with cellulitis

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Keywords: ^{18}F -FDG PET/CT
- Diffuse large B-cell lymphoma
- Cellulitis

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Received:

2 July 2015

Accepted revised:

5 November 2015

Abstract

Non-Hodgkin's lymphomas (NHL) quite often present in the neck but are seldom accompanied with cellulitis at the first diagnosis of the disease. We report a 56 year old woman with gradually neck swelling, which was initially treated as cellulitis. After examined by ultrasonography, computed tomography and after pathological assessment, the diagnosis of large B-cell lymphoma was made. This case highlights the usefulness of fluorine-18-fluorodeoxyglucose positron emission tomography (^{18}F -FDG PET/CT) in staging and assessing treatment response in NHL.

Hell J Nucl Med 2015; 18(3): 271-272

Epub ahead of print: 18 November 2015

Published online: 5 December 2015

Introduction

Non-Hodgkin's lymphomas (NHL) quite often are present in the neck but are seldom accompanied with cellulitis especially when the disease is first diagnosed. Chronic infections have been postulated as a potential mechanism for lymphomatogenesis, while acute, community-acquired infections may potentially contribute. [1, 2].

Case Report

A 56 years old woman, a retired check-out worker in a supermarket presented with a 4 months history of progressive swelling on the right side of her neck with local hyperthermia and pain (Figure 1A). She had no family history of lymphomas. Blood tests showed an increased white blood cell count, $11.2 \times 10^9/\text{L}$ (normal, $4.0\text{--}10.0 \times 10^9/\text{L}$) and 83.8% neutrophils (normal, 50%-70%). Fine-needle aspiration biopsy (FNAB) of the neck showed a small amount of pus, and cytology smears revealed a large number of inflammatory cells. She was initially diagnosed with neck cellulitis and received antibiotic therapy. After 10 days of antibiotic therapy, the symptoms of swelling and pain on the right neck were partially alleviated. Neck ultrasonography and contrast enhanced computed tomography (CECT) (Figure 1B) showed a huge mass on the right side of her neck with lymphadenopathy in the surrounding area, suspicious of malignancy.

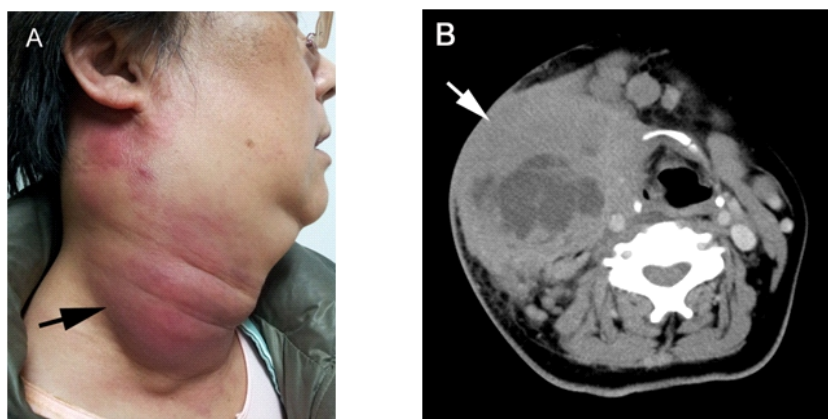


Figure 1.A-B. (A) A 56 years old woman with large swelling on the right side of the neck. (B) Contrast enhanced computed tomography showed this mass and lymphadenopathy suspicious of malignancy.

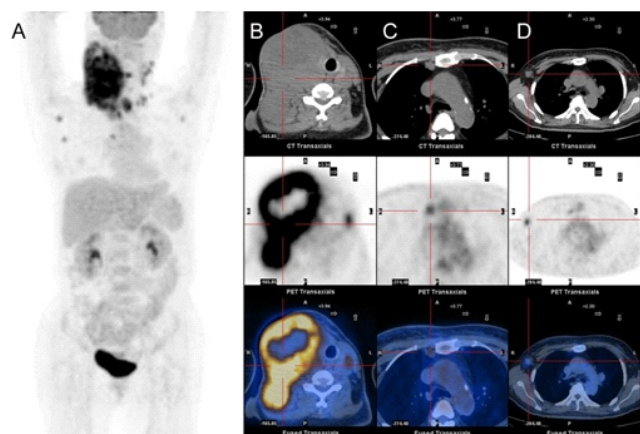


Figure 2. A-D. The ^{18}F -FDG PET/CT examination (Discovery ST; GE Healthcare, USA) showed in maximum intensity projection images (A) a large mass at the right side of the neck, measuring 13.2×9.4 cm with a maximum standardized uptake value (SUVmax) of 9.0, up to the right parotid gland and down to the right clavicle area. Transaxial views of the mass at the right neck are presented on an overlay of the CT, PET, and PET/CT images. The images (B, C and D) showed infiltration of the soft subcutaneous areas in the right neck and multiple intense hypermetabolic foci in the bilateral neck (B; SUVmax=8.1), the axillar (C; SUVmax=3.7) and the right internal mammary region (D; SUVmax=3.2). The findings were highly suspicious of lymphoma and repeated ultrasonography-mediated fine needle aspiration biopsy of the right neck mass was performed.

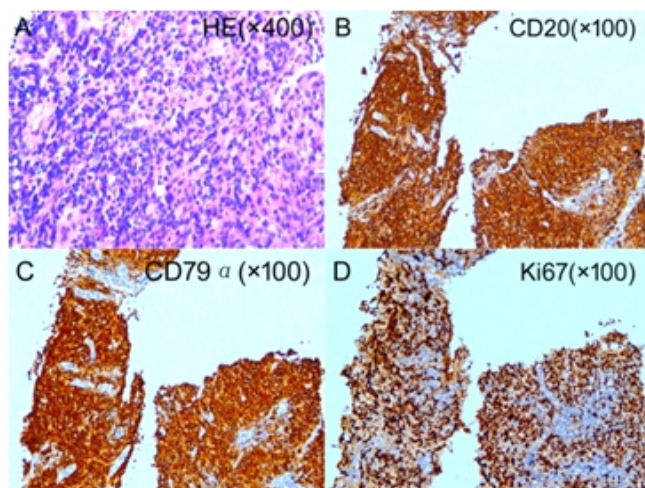


Figure 3. Microscopic examination showed larger lymphoid cells with mitotic figures and apoptosis (A). The cells were strongly positive for B-cell markers CD20 (B) and CD79α (C) and had a high Ki67 index (approximately 70%, D) (Figure D). The patient was diagnosed with diffuse large B-cell lymphoma (DLBCL) stage IIA and underwent chemotherapy with R-CHOP (Rituximab plus cyclophosphamide, doxorubicin hydrochloride, vincristine, and prednisolone).

Cellulitis, a skin infection is usually due to staphylococcus or streptococcus bacteria, and may be associated with all NHL subtypes; particularly, with T-cell as compared to B-cell lymphoma [3-7]. In our case, the patient was initially misdiagnosed by the clinical features of neck cellulitis and by FNAB. Although local ^{18}F -FDG PET/CT images could not identify whether the right neck mass was lymphoma or inflammation, the whole-body images showed hypermetabolic metastatic lymphadenopathy in other parts of the body, and the second FNAB that followed confirmed the diagnosis

of non-Hodgkin's B cell lymphoma. Others have also reported NHL with one large dominant size of lymphoma [8, 9].

After six cycles of R-CHOP chemotherapy, and after 5 months another ^{18}F -FDG PET/CT scan was performed that showed partial remission of the disease.

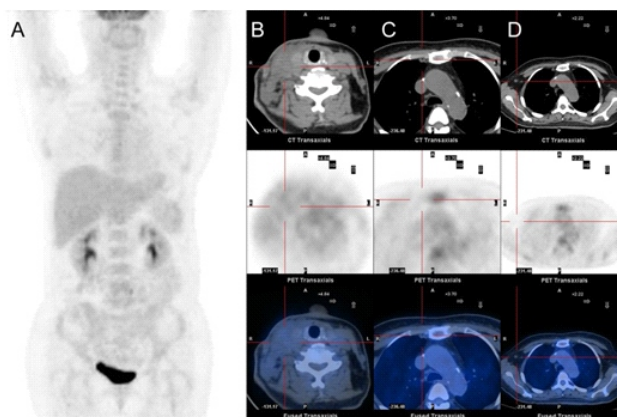


Figure 4. PET/CT study after six cycles of R-CHOP chemotherapy. Maximum intensity projection images (A) and the CT, PET, and PET/CT images revealed partial regression of abnormal ^{18}F -FDG uptake in the initially involved right neck (B; SUVmax=2.4) and complete regression in the bilateral axillary (C) and right internal mammary region sites (D).

In conclusion, this case indicates that ^{18}F -FDG PET/CT is a powerful imaging modality that holds promise in lymphoma staging and treatment response even when cellulitis is present.

The authors declare that they have no conflicts of interest

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