Interesting Image

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^{18}F-FDG PET/CT Correctly Differentiates Idiopathic Pericarditis from Recurrent Lymphoma in a Patient with Primary Mediastinal Lymphoma

^{18}F-FDG PET/BT, Primer Mediastinal Lenfomalı Bir Hastada İdiyopatik Perikarditi Tekrarlayan Lenfomadan Doğru Şekilde Ayırt Eder

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Abstract

A man in his 30s awaiting end-of-treatment ^{18}F-fluorodeoxyglucose positron emission tomography/CT (^{18}F-FDG PET/CT) for primary mediastinal B-cell lymphoma developed chest pain and pericardial effusion. His interim ^{18}F-FDG PET/CT showed complete metabolic responses. His blood test revealed elevated levels of inflammatory markers, including C-reactive protein of 204.1 mg/L and erythrocyte sedimentation rate of 106 mm/h. His pericardial biopsy revealed organizing fibrinous pericarditis with hemosiderin pigment deposition and no evidence of malignancy or granuloma. The ^{18}F-FDG PET/CT performed during this episode of illness revealed a mild degree of ^{18}F-FDG uptake along the pericardial lining [maximum standardized uptake value (SUV_{max}) =6.76] compared with the blood pool activity (SUV_{max} =3.17), which favors pericarditis over relapsed lymphoma. His symptoms subsided 2 weeks after treatment with an non-steroidal anti-inflammatory drug, and he had no sign of relapsed lymphoma on subsequent follow-ups.

Keywords: Nuclear medicine, pericarditis, non-Hodgkins lymphoma, cardiology

Öz

Primer mediastinal B hücreli lenfoma için tedavi sonu ^{18}F-florodeoksiglukoz pozitron emisyon tomografisi/bilgisayarlı tomografi (^{18}F-FDG PET/BT) bekleyen 30'lu yaşlarındaki bir erkek hastada göğüs ağrısı ve perikardiyal efüzyon gelişti. Ara değerlendirmedeki ^{18}F-FDG PET/BT'si tam metabolik yanıt göstermekteydi. Kan testinde enflamatuvar belirteçlerde artışı gösterecek şekilde C-reaktif protein düzeyi 204,1 mg/L ve eritrosit sedimantasyon hızı 106 mm/saat idi. Perikard biyopsisinde hemosiderin pigment birikimi ile birlikte organize fibrinöz perikardit saptandı ve malignite veya granülom kanıtı yoktu. Hastalığın bu epizodu sırasında yapılan ^{18}F-FDG PET/BT, lenfoma nüksüne göre perikarditi destekleyen kan havuzu aktivitesiyle [maksimum standardize tutulum değeri (SUV_{maks}) =3,17] karşılaştırıldığında perikardiyal hat boyunca hafif derecede ^{18}F-FDG tutulumunu (SUV_{maks} =6,76) ortaya çıkardı; bu da nükseden lenfomaya kıyasla perikarditi düşündürür. Hastanın semptomları steroid olmayan anti-enflamatuvar ilaç tedavisinden 2 hafta sonra azaldı ve sonraki takiplerde nükseden lenfoma belirtisi görülmedi.

Anahtar kelimeler: Nükleer tıp, perikardit, non-Hodgkin lenfoma, kardiyoloji

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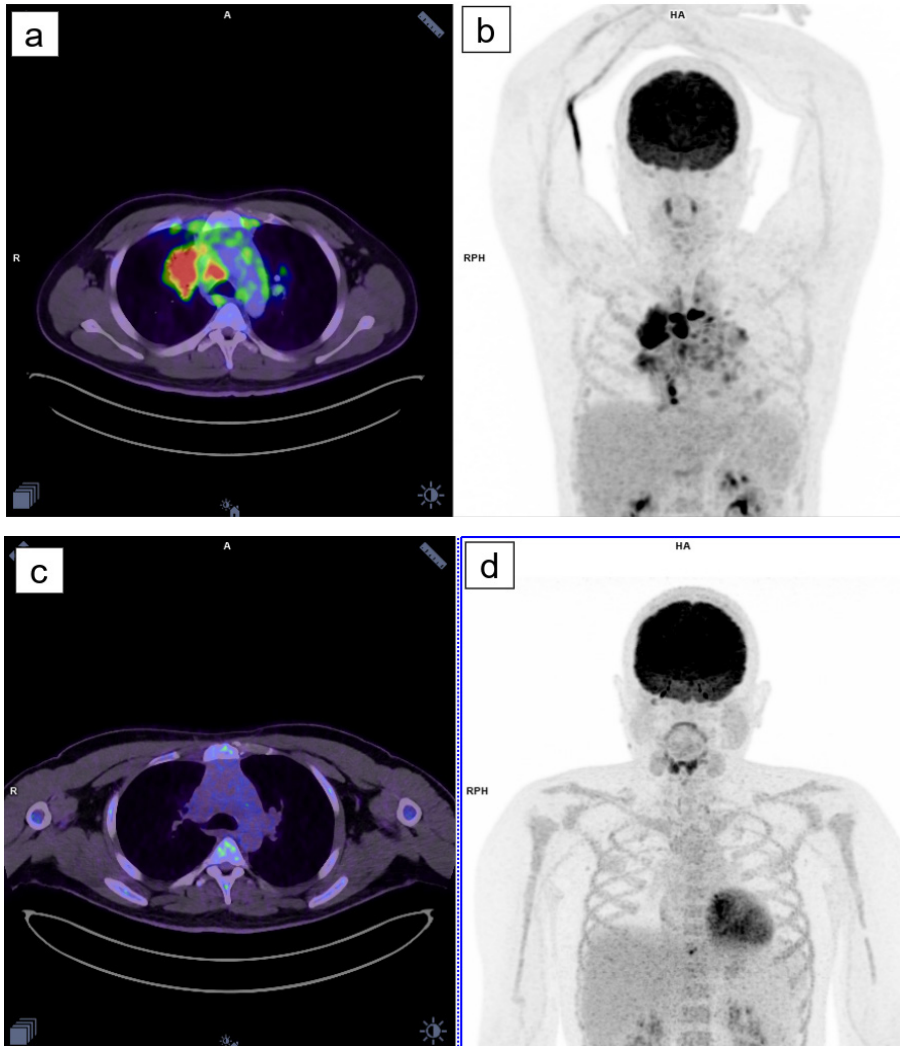

Figure 1. A man in his 30s had an underlying primary mediastinal B-cell lymphoma. The initial staging fluorine-18 fluorodeoxyglucose ([18]F-FDG) positron emission tomography/computed tomography (PET/CT) for his lymphoma demonstrated multiple abnormal [18]F-FDG-avid lymph nodes in the mediastinum, which was consistent with lymphomatous involvement (a, b). He received chemotherapy sessions. His interim [18]F-FDG PET/CT showed complete metabolic responses of the mediastinal lesions (c, d).

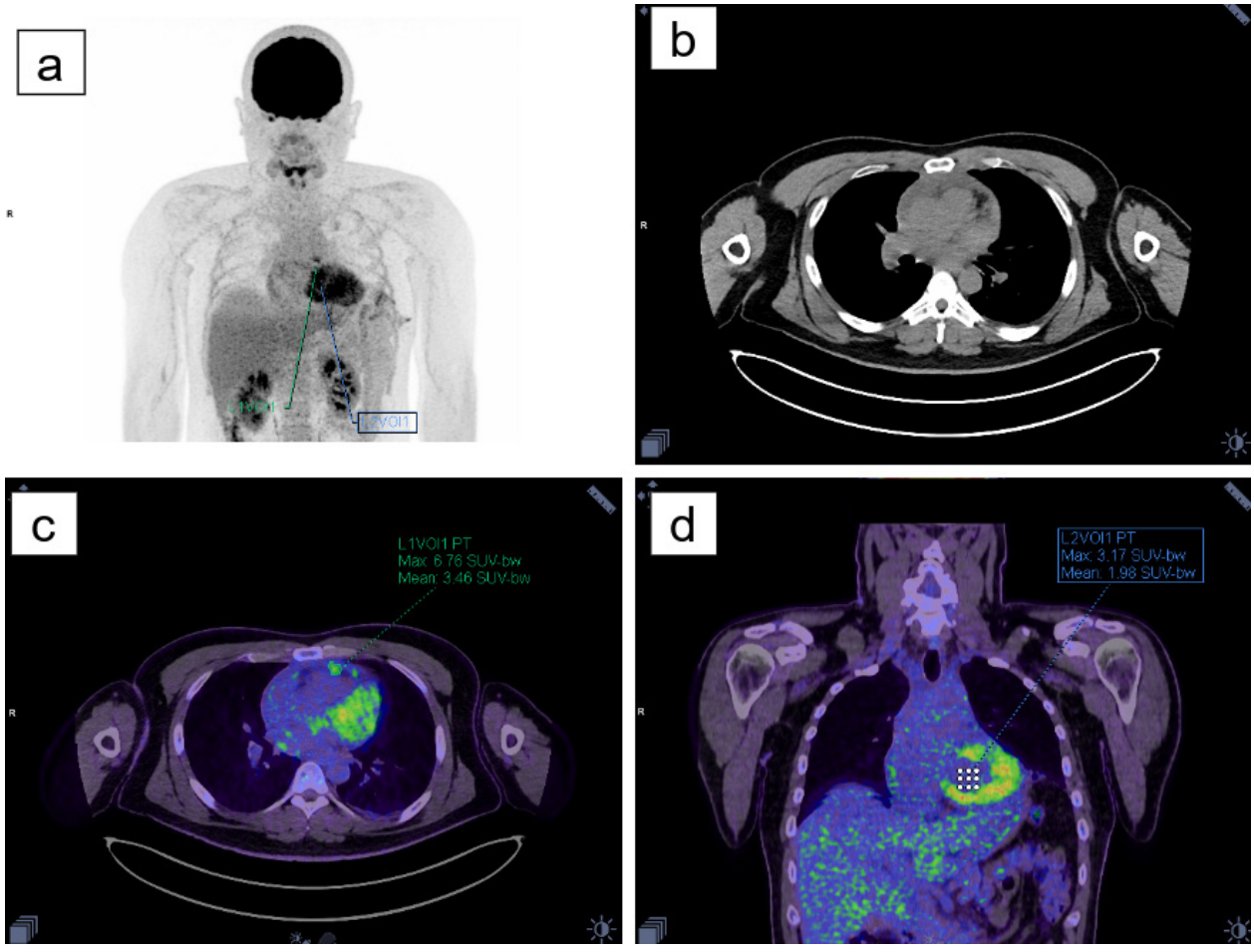

Figure 2. Approximately 1 month after the conclusion of his chemotherapy session, the patient experienced pruritic chest pain with fever and presented at the emergency department. Bedside echocardiography revealed recently developed 3 cm thick loculated pericardial effusion. A pericardial biopsy was performed, which yielded organizing fibrinous pericarditis with hemosiderin pigment deposition on pathological examination, without evidence of malignancy or granuloma. His erythrocyte sedimentation rate (ESR) was 106 mm/h and serum C-reactive protein (CRP) level was 204.1 mg/L. Follow-up ^{18}F-FDG PET/CT was performed to assess the end-of-treatment response to chemotherapy and rule out the possibility of relapsed lymphoma (a). ^{18}F-FDG PET/CT revealed the recent development of nodular ^{18}F-FDG uptake foci along the pericardial lining with a maximum standardized uptake value (SUV_{max}) of 6.76 (b, c). No other evidence of recurrent lymphoma was detected. As an internal reference, the measured SUV_{max} of the ventricular blood pool was 3.17 (d). The patient was diagnosed with acute idiopathic pericarditis and was treated with the non-steroidal anti-inflammatory drug ibuprofen. His chest pain and fever subsided approximately 2 weeks after the initiation of ibuprofen. His ESR was 15 mm/h, and his CRP was 4.35 mg/L 4 weeks after ibuprofen treatment. No ^{18}F-FDG PET/CT was performed afterward to follow up on his pericarditis.

Although ^{18}F-FDG PET/CT has not yet been established as a standard investigation for pericarditis, potential uses of ^{18}F-FDG PET/CT have been proposed for multiple pericardial diseases (1). One potential use of ^{18}F-FDG PET/CT is to differentiate between malignant and benign pericardial diseases. A study by Shao et al. (2) proposed a cut-off of SUV_{max} lesion/SUV_{max} blood pool ratio of >2.4 to indicate malignant pericardial disease with a sensitivity of 92.3% and specificity of 90.0%. In this study, the SUV_{max} ratio was 2.13, which correctly classified the uptake as benign. Other potential uses of ^{18}F-FDG PET/CT in acute idiopathic pericarditis include predicting the risk of pericarditis relapse (3) and differentiating tuberculous from idiopathic pericarditis (4,5). Our case report supports the idea that ^{18}F-FDG PET/CT can be a reliable diagnostic tool for differentiating malignant from non-malignant pericardial diseases.

Ethics

Informed Consent: The Institutional Review Board of the Faculty of Medicine at Chulalongkorn University approved this case and waived the requirement for written informed consent based on its retrospective nature (COE No. 020/2023).

Authorship Contributions

Surgical and Medical Practices: C.B., Concept: N.B., Design: N.B., Data Collection or Processing: C.B., Analysis or Interpretation: S.V., N.B., Literature Search: S.V., N.B., Writing: S.V., N.B.

Conflict of Interest: No conflicts of interest were declared by the authors.

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