Interesting Image

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An Incidental Case of Inflammatory Myopathy Detected During Oncologic ^{18}F-FDG PET/CT Imaging

Onkolojik ^{18}F-FDG PET/BT Görüntülemesi Sırasında Tesadüfen Saptanan Bir Enflamatuvar Miyopati Olgusu

Pınar Akkuş Gündüz, İrem Mesci, Çiğdem Soydal

Ankara University Faculty of Medicine, Department of Nuclear Medicine, Ankara, Türkiye

Abstract

^{18}F-fluorodeoxyglucose (FDG) positron emission tomography/computed tomography (PET/CT) is widely used in oncologic imaging; however, unexpected skeletal muscle uptake on oncologic ^{18}F-FDG PET/CT is a relatively frequent incidental finding, with a substantial proportion attributable to benign inflammatory conditions. Inflammatory myopathies may demonstrate increased FDG uptake through mechanisms similar to those in malignancy and may mimic metastatic disease, posing a diagnostic challenge in oncologic imaging. In this case, we aimed to demonstrate incidental ^{18}F-FDG uptake related to inflammatory myopathy detected on oncologic ^{18}F-FDG PET/CT imaging.

Keywords: Inflammatory myopathy, false positivity, ^{18}F-FDG PET/CT

Öz

^{18}F-florodeoksiglukoz (FDG) pozitron emisyon tomografisi/bilgisayarlı tomografi (PET/BT), onkolojik görüntülemede yaygın olarak kullanılmaktadır; ancak onkolojik ^{18}F-FDG PET/BT'de beklenmedik iskelet kası tutulumu nispeten sık karşılaşılan tesadüfi bir bulgu olup, bunların önemli bir kısmı benign inflamatuvar durumlara bağlıdır. Enflamatuvar miyopatiler, maligniteye benzer mekanizmalar aracılığıyla artmış FDG tutulumu gösterebilmekte ve metastatik hastalığı taklit edebilmekte, bu durum onkolojik görüntülemede tanısal güçlük oluşturabilmektedir. Bu olguda, onkolojik ^{18}F-FDG PET/BT görüntülemesinde saptanan enflamatuvar miyopatiye bağlı tesadüfi ^{18}F-FDG tutulumunun gösterilmesi amaçlandı.

Anahtar Kelimeler: Enflamatuvar miyopati, yanlış pozitiflik, ^{18}F-FDG PET/BT

Address for Correspondence: İrem Mesci, Ankara University Faculty of Medicine, Department of Nuclear Medicine, Ankara, Türkiye
E-mail: irem.mesci19@gmail.com **ORCID ID:** orcid.org/0000-0003-4382-2795
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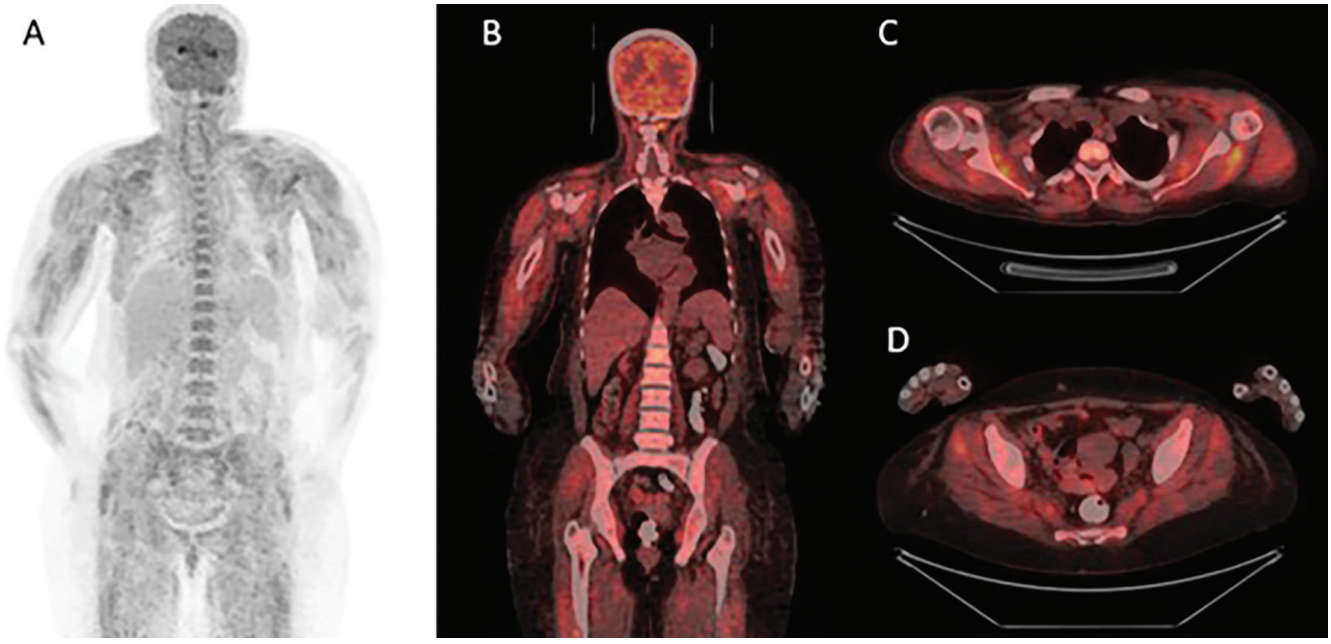


Figure 1. Diffuse symmetric skeletal muscle FDG uptake associated with inflammatory myopathy on oncologic ^{18}F-FDG PET/CT. A 46-year-old woman was admitted to hospital with a 2-month history of sweating, diffuse myalgia, proximal muscle weakness, and dysphagia. Laboratory evaluation revealed markedly elevated serum creatine kinase levels exceeding 10,000 U/L. The patient was hospitalized with a preliminary diagnosis of inflammatory myopathy, and ^{18}F-FDG PET/CT was performed to exclude an underlying malignancy. The patient had fasted for more than 6 hours, and the fasting blood glucose level measured prior to the administration of ^{18}F-FDG was <150 mg/dL. ^{18}F-FDG PET/CT MIP image (A), demonstrated diffuse, symmetric FDG uptake involving multiple skeletal muscle groups, without evidence of a primary tumor or metastatic disease. On transcoronal (B) and transaxial (C, D) images of the skeletal muscle groups, heterogeneous ^{18}F-FDG uptake was detected. Despite initiation of systemic corticosteroid therapy, the patient's clinical condition worsened. Subsequent magnetic resonance imaging of the thighs revealed diffuse pathological signal intensities involving the anteromedial compartment muscles, accompanied by widespread fascial edema, consistent with active inflammatory myopathy. Additionally, the diagnosis of dermatomyositis was histopathologically confirmed by a muscle tissue biopsy obtained from the patient's right lower extremity.

This case highlights that diffuse, symmetric skeletal muscle FDG uptake on oncologic PET/CT should raise suspicion for inflammatory myopathy, and it underscores the importance of correlating imaging findings with clinical and laboratory data to avoid misinterpretation as metastatic disease.

^{18}F-FDG PET/CT is commonly performed in oncology patients for staging neoplasms and evaluating treatment response. However, uptake of FDG is not entirely specific for neoplasm, and in addition to treatment-induced inflammatory changes, a variety of benign infectious and inflammatory processes can result in focal radiopharmaceutical uptake (1). FDG uptake observed in inflammatory myopathies occurs through mechanisms similar to those seen in malignant cells. Activated inflammatory cells, including macrophages, neutrophils, and lymphocytes, upregulate glucose transporters (GLUT-1 and GLUT-3) and increase hexokinase activity to meet their elevated energy demands (2,3). Inflammatory myopathies are characterized by focal or diffuse radiotracer accumulation within skeletal muscles. Certain inflammatory myopathies, particularly dermatomyositis, may present as paraneoplastic syndromes associated with underlying malignancies (4). FDG PET/CT offers the advantage of simultaneously assessing the severity of muscle inflammation and screening for potential systemic malignancy within a single imaging modality (5). Muscle FDG uptake in oncologic patients may be misinterpreted as metastatic disease. In the differential diagnosis, the patient's clinical history, physical examination findings (such as cutaneous manifestations), and the symmetry of muscle involvement are critical diagnostic clues (6).

Ethics

Informed Consent: Written informed consent was obtained from the patient.

Data Availability Declaration: The data supporting the findings of this case report are included within the article. No additional datasets were generated or analyzed during the current study.

Footnotes

Authorship Contributions

Surgical and Medical Practices: P.A.G., Ç.S., Concept: P.A.G., Ç.S., Design: P.A.G., Ç.S., Data Collection or Processing: İ.M., Analysis or Interpretation: İ.M., Literature Search: İ.M., Writing: İ.M.

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

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References

1. Lee H, Hwang KH. Focal incidental colorectal fluorodeoxyglucose uptake: should it be spotlighted? World J Clin Cases. 2024;12:2466-2474.
2. Vaidyanathan S, Patel CN, Scarsbrook AF, Chowdhury FU. FDG PET/CT in infection and inflammation–current and emerging clinical applications. Clin Radiol. 2015;70:787-800.
3. Love C, Tomas MB, Tronco GG, Palestro CJ. FDG PET of infection and inflammation. Radiographics. 2005;25:1357-1368.
4. Yildiz H, Lepere C, Zorzi G, Gheysens O, Roodhans F, Pothen L. [^{18}F]FDG-PET/CT in idiopathic inflammatory myopathies: retrospective Data from a Belgian Cohort. Diagnostics (Basel). 2023;13:2316.
5. Girija MS, Tiwari R, Vengalil S, Nashi S, Preethish-Kumar V, Polavarapu K, Kulanthaivelu K, Arbind A, Bardhan M, Huddar A, Unnikrishnan G, Kiran VR, Chawla T, Nandeesh B, Nagaraj C, Nalini A. PET-MRI in idiopathic inflammatory myositis: a comparative study of clinical and immunological markers with imaging findings. Neurol Res Pract. 2022;4:49.
6. Rahman WT, Wale DJ, Viglianti BL, Townsend DM, Manganaro MS, Gross MD, Wong KK, Rubello D. The impact of infection and inflammation in oncologic ^{18}F-FDG PET/CT imaging. Biomed Pharmacother. 2019;117:109168.