The Utility of $^{18}$F-FDG PET/CT in Detecting Multiple Metastases in Papillary Renal Cell Carcinoma

Papiller Renal Hücreli Karsinomda Multipl Metastaz Saptanmasında $^{18}$F-FDG PET/BT’nin Yararı

Melis Oflas, Duygu Has Şimşek, Serkan Kuyumcu, Murat Yılmaz Kıran, Yasemin Şanlı

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

Abstract

The diagnostic performance of $^{18}$F-fluorodeoxyglucose ($^{18}$F-FDG) positron emission tomography/computed tomography (PET/CT) for primary kidney tumors is limited. Nevertheless, $^{18}$F-FDG PET/CT is valuable for staging renal cell carcinoma (RCC) when suspected metastases coexist, as one-third of patients with RCC have distant metastases upon diagnosis. Herein, we present a 53-year-old male patient with extensive $^{18}$F-FDG-avid metastatic lesions and an $^{18}$F-FDG-avid renal mass, which later revealed RCC.

Keywords: $^{18}$F-FDG PET/CT, papillary renal cell carcinoma, metastasis, staging

ÖZ

Primer böbrek tümörlerinin tespitinde $^{18}$F-florodeoksiglukoz ($^{18}$F-FDG) pozitron emisyon tomografisi/bilgisayarlı tomografının (PET/BT) tanısal performansı sınırlıdır. Ancak, tanı anında renal hücreli karsinom (RCC) hastalığının üçte birinde uzak metastaz bulunduğundan dolayı metastaz şüphesi varlığında $^{18}$F-FDG PET/BT, RCC evrelemesinde değerli bir yöntemdir. Burada, $^{18}$F-FDG tutulumu gösteren yaygın metastazların bulunması ve $^{18}$F-FDG tutulumu gösteren renal kitleden daha sonra RCC tanısı alan S3 yaşında erkek hasta sunulmuştur.

Anahtar kelimeler: $^{18}$F-FDG PET/BT, papiller renal hücreli karsinom, metastaz, evreleme

Address for Correspondence: Melis Oflas MD, Istanbul University, Istanbul Faculty of Medicine, Department of Nuclear Medicine, Istanbul, Türkiye
Phone: +90 212 414 20 00 - 31392 E-mail: melis.oflas@istanbul.edu.tr ORCID ID: orcid.org/0000-0001-9796-3302
Received: 28.02.2024 Accepted: 05.06.2024 Epub: 17.07.2024

Copyright © 2024 The Author. Published by Galenos Publishing House on behalf of the Turkish Society of Nuclear Medicine. This is an open access article under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND) International License.
Figure 1. A 53-year-old male patient with no known comorbidity was admitted to the hospital with complaints of fever, night sweats, and fatigue for the last month. Upon detecting a suspicious mass in the right kidney and lung metastases on contrast-enhanced computed tomography (CT), 18F-fluorodeoxyglucose (18F-FDG) positron emission tomography (PET)/CT was performed (A) (1,2,3,4). In the PET/CT images, an exophytic localized renal mass in the upper pole of the right kidney exhibited increased FDG uptake [maximum standardized uptake value (SUV\text{max}): 5.5], which was considered suspicious for renal cell carcinoma (RCC) (B, arrows). In addition, multiple hypermetabolic parenchymal and pleural lesions in bilateral lungs (SUV\text{max}: 11.9) (C, arrows), bilateral adrenal glands (SUV\text{max}: 9.5) (D, arrows), liver parenchyma (SUV\text{max}: 10.0) (D, arrows), peritoneum (SUV\text{max}: 8.7), mesenterium (SUV\text{max}: 13.1), and omentum (SUV\text{max}: 11.1) (E, arrows), multiple bone metastases (SUV\text{max}: 12.1), and soft tissue lesions in subcutaneous tissue and muscles (SUV\text{max}: 14.6) (F, arrows). All lesions that could not be distinguished on CT images were distinguished on PET/CT images. A biopsy of the renal mass revealed papillary RCC (pRCC). A few days later, after pathological diagnosis, the patient was taken to the hospital because of worsening general condition and died in the intensive care unit due to hemodynamic deterioration. pRCC has a better outcome in localized disease than clear cell RCC (ccRCC). However, metastatic pRCC is associated with higher recurrence rates and lower survival than ccRCC (5). Moreover, various studies have reported that a higher SUV\text{max} or presence of metastatic disease indicates shorter survival (6,7,8). Therefore, 18F-FDG PET/CT is an efficient method for staging RCC, primarily for estimating the tumor load of metastatic disease.

Ethics

Informed Consent: Patient consent was obtained.

Authorship Contributions


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

Financial Disclosure: The authors declare that this study has received no financial support.

References