Extrapulmonary Tuberculosis Mimicking Malignancy

Maligniteyi Taklit Eden Ekstrapulmoner Tüberküloz

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Abstract

Tuberculosis (TB) remains a significant public health problem in developing countries, but its diagnosis can be challenging as it may mimic malignancy or other granulomatous diseases. Although pulmonary TB is the most common form, TB can spread hematogenously, lymphatically, or by direct extension to any tissue or organ. We report a 62-year-old female who underwent 18F-fluorodeoxyglucose positron emission tomography/computed tomography (^{18}F-FDG PET/CT) for malignancy evaluation, was diagnosed with extrapulmonary TB, and had her treatment response assessed with ^{18}F-FDG PET/CT.

Keywords: Tuberculosis, malignancy, FDG PET, extrapulmonary, PET/CT

Öz

Tüberküloz (TB), gelişmekte olan ülkelerde önemli bir sağlık sorunu olmaya devam etmektedir. Ancak malignite veya diğer granülomatöz hastalıklarla karışabileceğinden tanısı güçleşebilmektedir. Pulmoner TB hastalığın en yaygın formu olmasına rağmen, TB hematolojik, lenfatik yolla veya komşuluk yoluyla herhangi bir doku veya organa yayılabilir. Bu olgu sunumunda malignite şüphesiyle 18F-florodeoksiglukoz pozitron emisyon tomografisi/bilgisayarlı tomografi (^{18}F-FDG PET/BT) görüntülemesi yapılan, ekstrapulmoner TB tanısı alan ve ^{18}F-FDG PET/BT ile tedavi yanıtı değerlendirilen 62 yaşında kadın hasta bildirilmiştir.

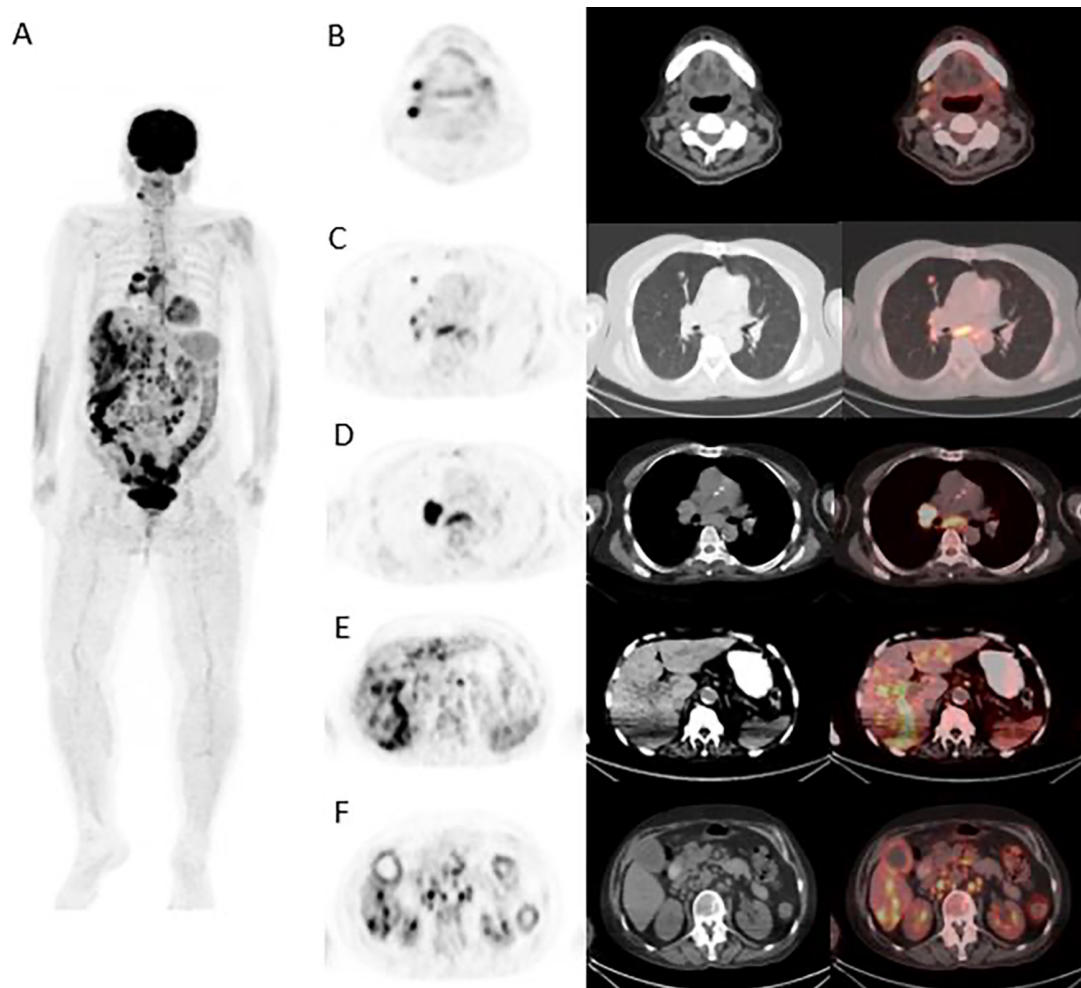**Anahtar kelimeler:** Tüberküloz, malignite, FDG PET, ekstrapulmoner, PET/BT

Figure 1. A 62-year-old female patient presenting with newly onset fatigue, weakness, night sweats, and weight loss underwent an 18F-fluorodeoxyglucose positron emission tomography/computed tomography (PET/CT) scan for malignancy screening. Maximum intensity projection image (A), together with transaxial PET, CT, and PET/CT fusion images, demonstrated multiple intensely hypermetabolic lymph nodes in supra- and infradiaphragmatic lymphatic stations (B, D, F); hypermetabolic nodular lesions in the parenchyma of both lungs (C); hypermetabolic hypodense lesions in both lobes of the liver (E); and diffuse hypermetabolism in the spleen and segments of the colon (E, F). Excisional biopsy of a cervical lymph node demonstrated tuberculous lymphadenitis, while colonoscopy revealed a granulomatous appearance consistent with tuberculosis. Biopsy of the hypermetabolic liver lesions showed no evidence of malignancy.
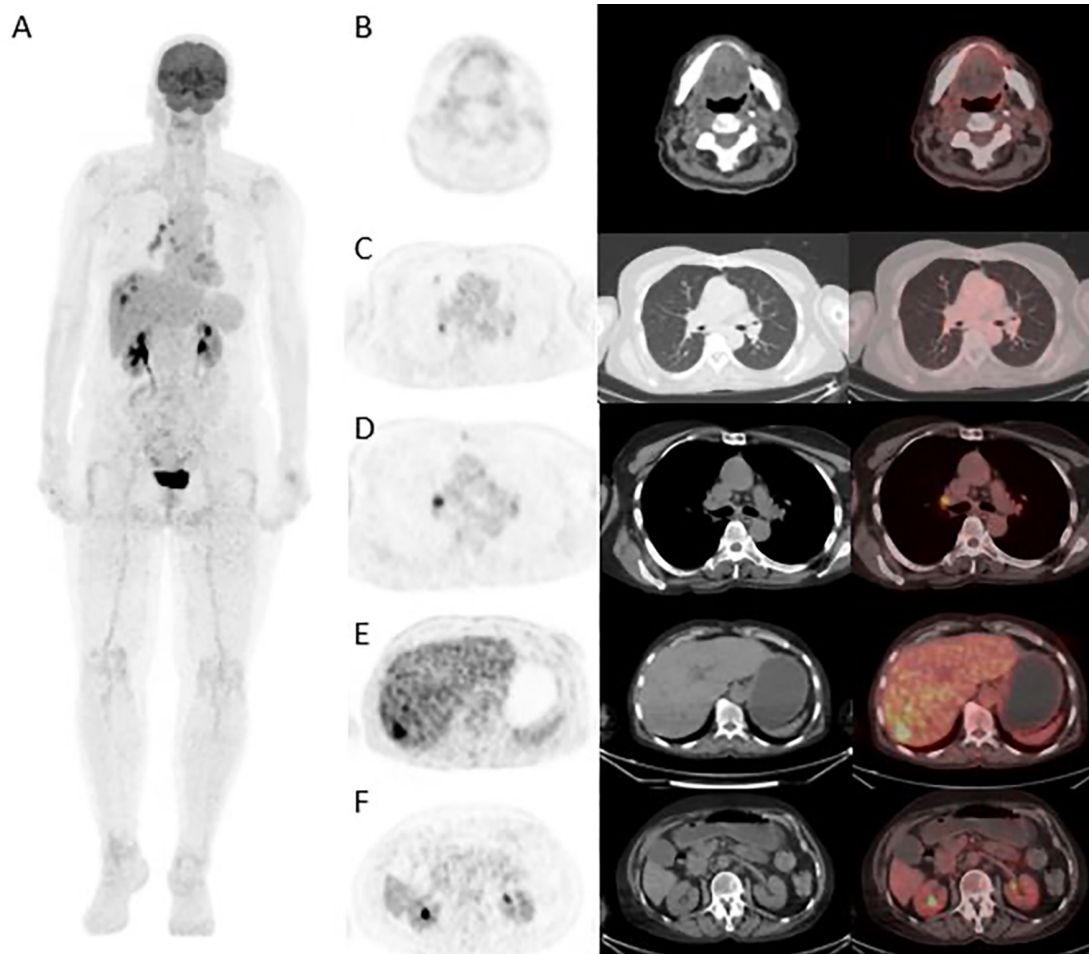
Figure 2 (A-F). Standard quadruple anti-tuberculosis (TB) therapy was initiated for the patient. After treatment, a partial response was observed in the hypermetabolic lesions in the liver and mediastinum identified on the pretreatment 18F-fluorodeoxyglucose positron emission tomography/computed tomography (^{18}F-FDG PET/CT), while a complete response was observed in the remaining lesions.

Although pulmonary TB is the most common form of the disease, TB can spread hematogenously, lymphatically, or by direct extension to virtually any tissue or organ. Hepatobiliary TB is a rare extrapulmonary manifestation that can mimic malignancy and may lead to diagnostic delays due to its nonspecific symptoms. TB should be considered in the differential diagnosis of patients, particularly immunocompromised individuals, presenting with multiple hypermetabolic hepatic lesions (1,2). ^{18}F-FDG PET/CT is a valuable modality for detecting tuberculous lymphadenitis and serves as a complementary tool in the diagnosis of extrapulmonary TB. Owing to the intense FDG uptake by tuberculous granulomas, it is highly effective in identifying tuberculous lymphadenitis. Additionally, maximum standard uptake values provides information on the degree of inflammatory activity even in the absence of bacteriological confirmation. ^{18}F-FDG PET/CT can detect lesions that may be overlooked on morphological imaging, assist in selecting optimal biopsy sites, and differentiate active from inactive disease by evaluating early treatment response. However, ^{18}F-FDG PET/CT cannot reliably distinguish tuberculous lymphadenitis from lymphoma, sarcoidosis, or metastatic lymphadenopathy. In countries where TB is endemic, tuberculous lymphadenitis should be considered in the differential diagnosis of patients with enlarged lymph nodes, and lymph node biopsy plays a crucial role in establishing the diagnosis in light of ^{18}F-FDG PET/CT findings (3-5).

Ethics

Informed Consent: Informed consent was obtained from the patient for publication.

Footnotes

Authorship Contributions

Concept: R.L.U.B., H.B.S., Design: R.L.U.B., H.B.S., Data Collection or Processing: C.G., Literature Search: C.G., Writing: C.G., R.L.U.B., H.B.S.

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References

1. Wang X, Shi X, Yi C, Chen Z, Zhang B, Zhang X. Hepatic tuberculosis mimics metastasis revealed by 18F-FDG PET/CT. Clin Nucl Med. 2014;39:e325-e327.

2. Di Renzo C, Tabrizian P, Kozuch DE, Fiel MI, Schwartz ME. Abdominal tuberculosis mimicking cancer clinically and on fluorodeoxyglucose (FDG)-positron emission tomography (PET) imaging: a two-case series. Am J Case Rep. 2020;21:e918901.

3. Liao F, Huang Z, Xu R, Luo Z, Qi W, Fan B, Yu J. Analysis of misdiagnosis and 18F-FDG PET/CT findings of lymph node tuberculosis. J Xray Sci Technol. 2022;30:941-951.

4. Yu WY, Lu PX, Assadi M, Huang XL, Skrahin A, Rosenthal A, Gabrielian A, Tartakovsky M, Wáng YXJ. Updates on ^{18}F-FDG-PET/CT as a clinical tool for tuberculosis evaluation and therapeutic monitoring. Quant Imaging Med Surg. 2019;9:1132-1146.

5. Sathekge M, Maes A, D'Asseler Y, Vorster M, Gongxeka H, Van de Wiele C. Tuberculous lymphadenitis: FDG PET and CT findings in responsive and nonresponsive disease. Eur J Nucl Med Mol Imaging. 2012;39:1184-1190.