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# Paget's Disease Mimicking Prostate Cancer Metastasis with $^{68}$Ga-PSMA PET/CT

## *$^{68}$Ga-PSMA PET/BT'de Prostat Kanseri Metastazını Taklit Eden Paget Hastalığı*

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## Abstract

$^{68}$Ga-prostate-specific membrane antigen (PSMA) positron emission tomography/computed tomography imaging successfully detects bone metastases in prostate cancer (PCa). However, assuming that all detected PSMA-avid bone lesions are metastases should be avoided. It is essential to evaluate PCa patients with clinical findings and to consider possible differential diagnoses, especially in low-risk patients. Herein, we present the case of a 62-year-old male patient recently diagnosed with low-risk prostate adenocarcinoma with a PSMA-avid bone lesion corresponding to Paget's disease.

**Keywords:** PET/CT, Paget's disease of bone, prostate cancer

## Öz

$^{68}$Ga-prostat-spesifik membran antijeni (PSMA) pozitron emisyon tomografisi/bilgisayarlı tomografi görüntüleme; prostat kanserinde (PCa) kemik metastazlarını başarılı bir şekilde tespit eder. Ancak, PSMA tutulumu gösteren kemik lezyonlarının tamamının metastaz olarak değerlendirilmesinden kaçınılmalıdır. Özellikle düşük riskli PCa hastalarının klinik bulguları ile birlikte değerlendirilmesi ve muhtemel ayırıcı tanıların göz önünde bulundurulması gerekmektedir. Bu yazıda, yakın zamanda düşük riskli prostat adenokarsinomu tanısı alan ve Paget hastalığı ile uyumlu olarak değerlendirilen PSMA tutulumu gösteren kemik lezyonu bulunan 62 yaşında bir erkek hasta sunulmuştur.

**Anahtar kelimeler:** PET/BT, kemiğin Paget hastalığı, prostat kanseri

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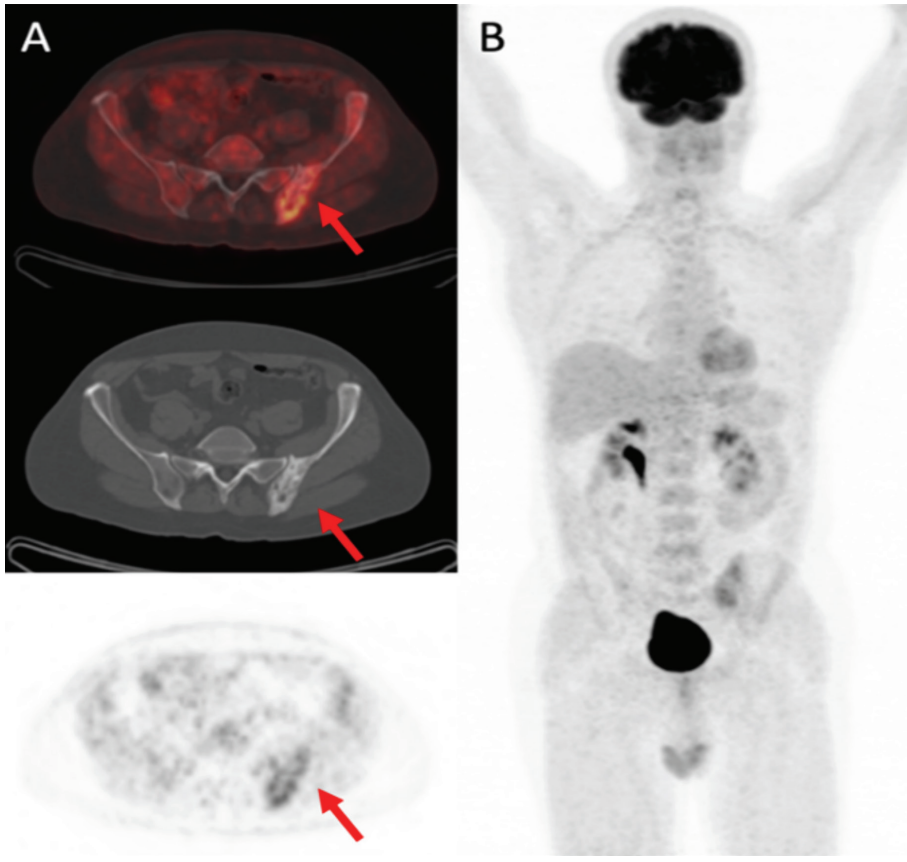


**Figure 1.** A 62-year-old male patient with bone pain in the left pelvic region underwent $^{18}$F-fluorodeoxyglucose ($^{18}$F-FDG) positron emission tomography/computed tomography (PET/CT) for malignancy screening after detecting a lesion in the left iliac bone with CT. On axial $^{18}$F-FDG PET/CT images (A), an FDG-avid lesion with sclerotic areas was detected [maximum standardized uptake value ($SUV_{max}$): 6.3]. No other findings were suspicious for FDG-avid primary tumor or metastases (B).

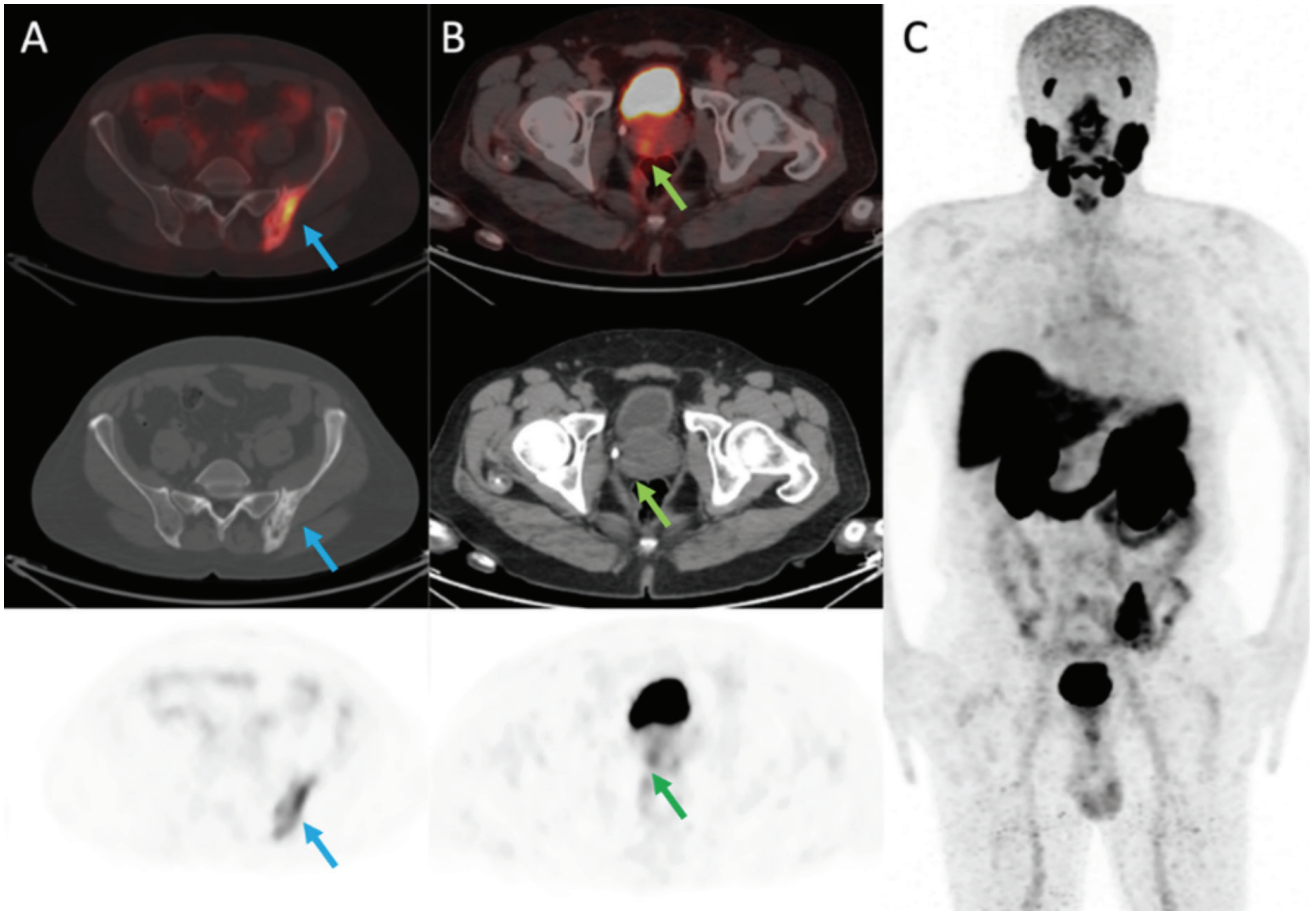


**Figure 2.** Subsequently, the patient was diagnosed with prostate cancer (PCa) [Gleason score: 3+3=6, ISUP Grade 1; initial prostate-specific antigen (PSA) 2.54 ng/mL] after nodule detection at the urology consultation. Thus, 2 months after $^{18}$F-FDG PET/CT, he underwent $^{68}$Ga-PSMA PET/CT for disease staging considering the previous $^{18}$F-FDG PET/CT and a slightly elevated bone alkaline phosphatase level of 23.6 mg/L (1,2). In $^{68}$Ga-PSMA PET/CT images, intense PSMA expression was observed in the left iliac bone lesion ($SUV_{max}$: 17.85). However, CT images appeared Paget-like, such as cortical thickening and sclerosis (A, arrows). Meanwhile, no other finding could be detected in $^{68}$Ga-PSMA PET/CT images, rather than a faint heterogeneous PSMA expression in the prostate gland (B, arrows; C).

In PCa staging, bone metastases are uncommon at low total PSA levels. The lesion in the left iliac bone was interpreted as Paget's disease, and he was referred to an internal medicine specialist (3,4,5,6). Paget's disease is a benign bone pathology demonstrated by abnormal bone remodeling; the pelvis, spine, femur, tibia, and skull are the main affected body parts. The main symptom of Paget's disease is bone pain due to high bone turnover, which can be relieved by bisphosphonate (7). The patient belonged to a lower-risk PCa group; therefore, the clinician opted for active surveillance (AS). Six months later, the patient had a total PSA level of 1.87 ng/mL without any treatment. Major urology guidelines suggest that patients with PCa with ISUP grade 1 having a low clinical stage and low total PSA values should be considered for AS (8). Consequently, it is essential to evaluate the data obtained from $^{68}$Ga-PSMA PET/CT images with the patient's clinical presentation and consider the possible benign pathologies that can be mistaken for malignancy.

### Ethics

**Informed Consent:** Patient consent was obtained.

### Authorship Contributions

Surgical and Medical Practices: M.O., E.G.I., Z.G.Ö., D.H.Ş., Y.Ş., Concept: M.O., E.G.I., Y.Ş., Design: M.O., E.G.I., D.H.Ş., Y.Ş., Data Collection or Processing: M.O., Analysis or Interpretation: M.O., Z.G.Ö., D.H.Ş., Literature Search: M.O., Writing: M.O., Z.G.Ö.

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

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