



# Metastatic Superscan in $^{18}\text{F}$ PSMA PET/CT of a Patient with Prostate Carcinoma

## Prostat Karsinomu Olan Bir Hastanın $^{18}\text{F}$ PSMA PET/BT'sinde Metastatik Superscan

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### Abstract

A biopsy-proven patient with prostate carcinoma aged 70 years was referred to the department of nuclear medicine for radionuclide-based therapy. His prostate-specific antigen levels were  $>1000$  ng/mL, and prostatic magnetic resonance imaging showed an enlarged prostate with a heterogeneous signal and size  $3.8 \times 3.7 \times 3.5$  cm with few small heterogeneous nodular signals in the transition zone. He was scheduled for  $^{18}\text{F}$  prostate-specific membrane antigen (PSMA) positron emission tomography/computed tomography (PET/CT) scan before therapy.  $^{18}\text{F}$  PSMA PET/CT revealed PSMA-expressing prostate lesions (maximum standardized uptake value  $\sim 10.2$ ) with extension into the urinary bladder along with bilateral supraclavicular, mediastinal, retrocrural, retroperitoneal, and pelvic lymph nodes and sclerotic lesions in the entire axial and appendicular skeleton.

**Keywords:** Superscan, prostate carcinoma,  $^{18}\text{F}$  PSMA PET/CT,  $^{18}\text{F}$  prostate-specific membrane antigen

### Öz

Biyopsi ile kanıtlanmış 70 yaşındaki prostat karsinomu olan hasta, radyonüklid bazlı tedavi için nükleer tıp bölümüne yönlendirildi. Prostat spesifik antijen düzeyi  $>1000$  ng/mL idi ve prostat manyetik rezonans görüntülemesinde heterojen sinyalli,  $3,8 \times 3,7 \times 3,5$  cm boyutunda, geçiş bölgesinde az sayıda küçük heterojen nodüler sinyal içeren büyümüş prostat görüldü. Tedavi öncesinde kendisine  $^{18}\text{F}$  prostat spesifik membran antijen (PSMA) pozitron emisyon tomografisi/bilgisayarlı tomografi (PET/BT) taraması yapılması planlandı.  $^{18}\text{F}$  PSMA PET/BT'de mesaneye uzanan PSMA eksprese eden prostat lezyonu (maksimum standartlaştırılmış tutulum değeri  $\sim 10,2$ ) ile birlikte iki taraflı supraklaviküler, mediastinal, retrokrural, retroperitoneal ve pelvik lenf nodları ve tüm aksiyal ve apendiküler iskelette sklerotik lezyonlar ortaya çıktı.

**Anahtar kelimeler:** Superscan, prostat karsinomu,  $^{18}\text{F}$  PSMA PET/BT,  $^{18}\text{F}$  prostat-spesifik membran antijeni

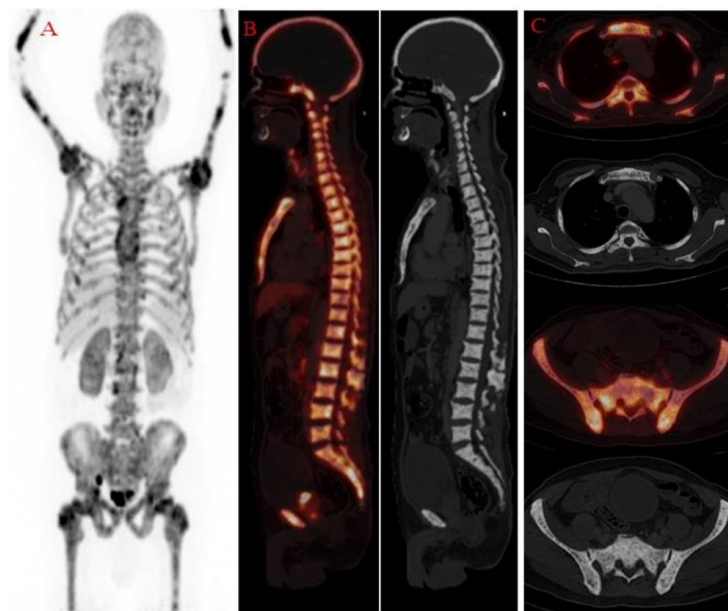
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**Figure 1.** <sup>18</sup>F prostate-specific membrane antigen (PSMA) positron emission tomography/computed tomography (PET/CT) scan maximum intensity projection image (A) showing generalized increased patchy tracer uptake throughout the skeleton and reduced tracer uptake in salivary and lacrimal glands, spleen, proximal small gut, and kidneys mimicking a metastatic superscan. The corresponding CT scan showed the sclerotic lesion in the visualized axial and appendicular skeleton with increased radiotracer on PET/CT in sagittal (B) and transaxial sections at the level of the thorax and pelvic regions (C), respectively. Superscan of malignancy is a well-known phenomenon on Tc-99m methylene diphosphonate bone scintigraphy. There is increased patchy/diffuse uptake of radiotracer throughout the skeleton with faint/non-visualization of the kidneys (1). Superscans are often seen in benign conditions (including hyperparathyroidism, renal osteodystrophy and Paget's disease), myeloproliferative disorders (including leukemia lymphoma and Waldenstrom's disease), and malignancies (like prostate, breast and lung) (2,3). Superscans indicate advanced stages of disease and have poor prognoses (4,5). <sup>18</sup>F PSMA PET/CT has significant value in staging (6), detection of biochemically recurrent prostate cancer (7), risk stratification, and evaluation of distant metastases in prostate carcinoma (8).

## Ethics

**Informed Consent:** The authors certify that they have obtained all appropriate patient consent forms.

## Authorship Contributions

Surgical and Medical Practices: M.M.S., Concept: M.M.S., Design: S.D., Data Collection or Processing: L.K., P.B.T., Analysis or Interpretation: S.V., Literature Search: S.V., Writing: M.M.S.

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