*Interesting Image*
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# Atypical Presentation of Metastatic Castrate-resistant Prostate Cancer in a Middle Aged African Male with Good Response to Radioligand Therapy

## *Radyoligand Tedavisine İyi Yanıt Veren Orta Yaşlı Afrikalı Bir Erkekte Metastatik Kastrasyon Dirençli Prostat Kanserinin Atipik Prezentasyonu*

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**Abstract**

Prostate cancer typically follows a characteristic pattern of metastatic spread to the pelvic lymph nodes and bone. Atypical patterns of metastasis are rare but have been documented. In African men, this disease tends to follow a more aggressive course, with the possibility of an atypical site of metastatic spread. We present a case of a 58-year- old African male with metastatic castrate-resistant prostate cancer who presented with both typical and atypical patterns of metastatic disease detected by a fluorine 18 prostate-specific membrane antigen positron emission tomography/computed tomography scan. This patient also had a good response to radioligand therapy.

**Keywords:** Metastatic castrate-resistant prostate cancer, atypical metastases, $^{18}$F-PSMA

**Öz**

Prostat kanseri tipik olarak pelvik lenf düğümlerine ve kemiğe metastatik yayılım yapar. Atipik metastaz paterni nadirdir ancak daha önce gösterilmiştir. Afrikalı erkeklerde bu hastalık, atipik metastatik yayılma olasılığıyla birlikte daha agresif bir seyir izleme eğilimindedir. Flor 18 prostat spesifik membran antijeni pozitron emisyon tomografisi/bilgisayarlı tomografi taraması ile tespit edilen hem tipik hem de atipik metastatik hastalık paterniyle başvuran, metastatik kastrasyon dirençli prostat kanseri olan 58 yaşında Afrikalı bir erkek olguyu sunuyoruz. Bu hasta aynı zamanda radyoligand tedavisine de iyi yanıt vermiştir.

**Anahtar kelimeler:** Metastatik kastrasyon dirençli prostat kanseri, atipik metastazlar, $^{18}$F-PSMA

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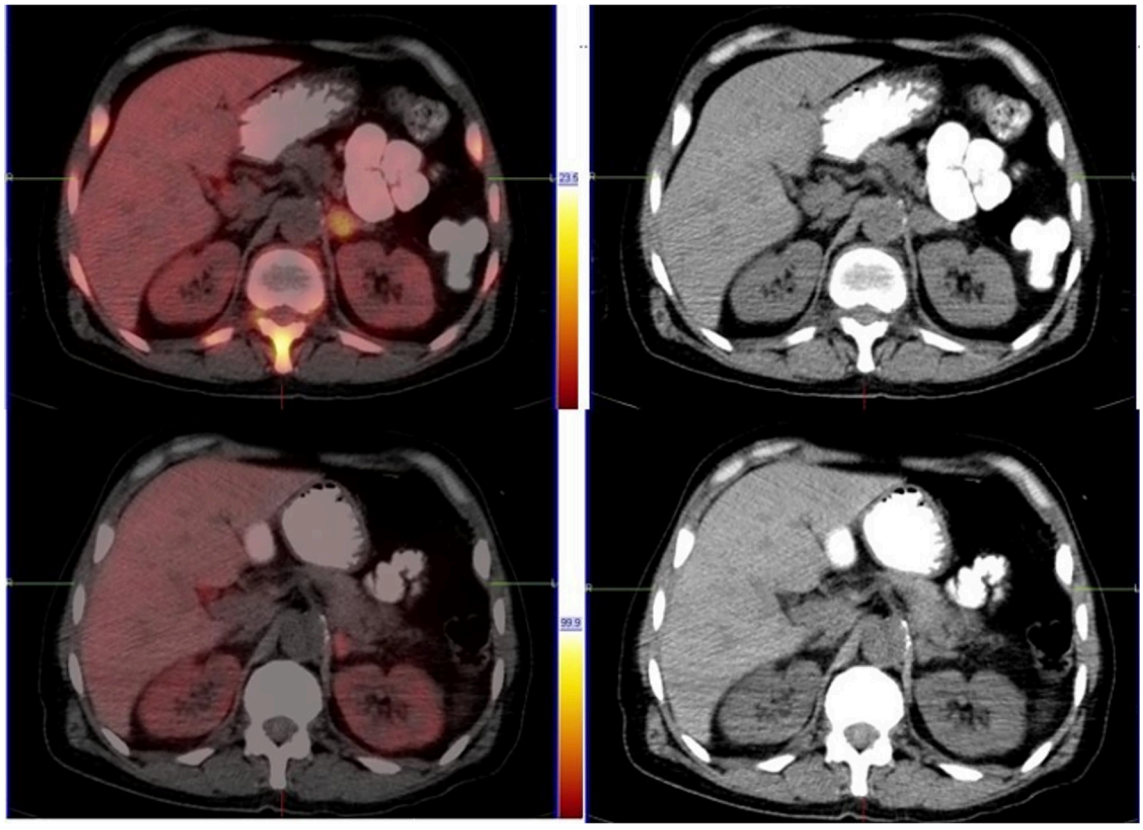

**Figure 1.** Fluorine 18 ($^{18}$F) positron emission tomography/computed tomography (PET/CT) and CT only images of a 58-year-old African male with high-risk adenocarcinoma [Gleason score 5+4 and prostate-specific antigen (PSA) 4, 441 ug/L] referred to our facility for radioligand therapy workup. The images in the top row reveal increased prostate-specific membrane antigen (PSMA) expression in the medial limb of the left adrenal gland [standardized uptake value (SUV): 15.04], which is confirmed to be bulky on the CT-only images. The images below are post 4 cycles of 177Lu-PSMA radioligand therapy images, revealing a reduction in PSMA expression (SUV: 5.30) and the size of the previously affected adrenal gland, confirming the response to therapy. The adrenal gland is one of the atypical sites for metastatic prostate cancer (1). In a retrospective study involving 620 patients with biopsy-proven prostate cancer, adrenal metastases were observed in 12 of the 82 patients (15%) with an atypical site of metastatic disease (2). However, adrenal metastases are considered extremely rare, accounting for 1% of all metastatic cases (3).

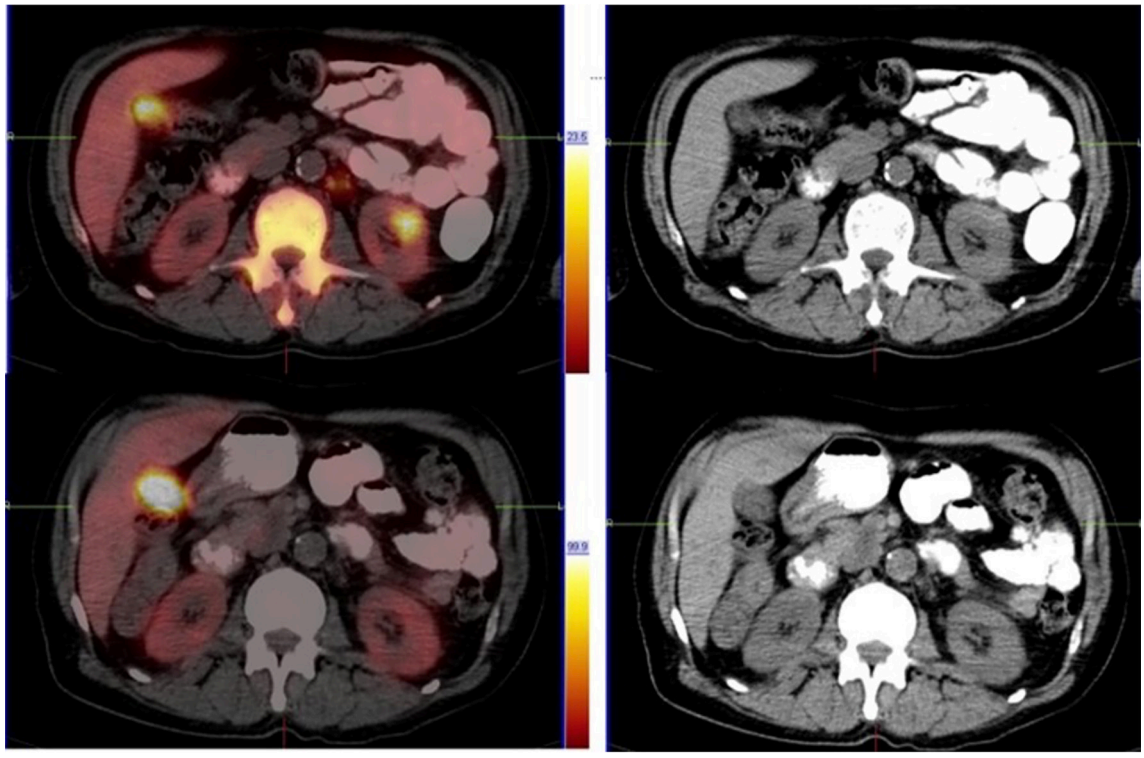

**Figure 2.** $^{18}$F PET/CT and CT only images of the same patient. The images in the top row reveal increased PSMA expression in the left kidney (SUV: 24.7), with no obvious CT changes. The images below are after 4 cycles of 177Lu-PSMA radioligand therapy, which demonstrate complete resolution of the disease in the left kidney (SUV: 6.5). Few cases of prostate cancer metastasizing to the kidney have been reported (4,5,6). Chen et al. (6) described renal metastases in the setting of prostate cancer as an extremely rare entity.

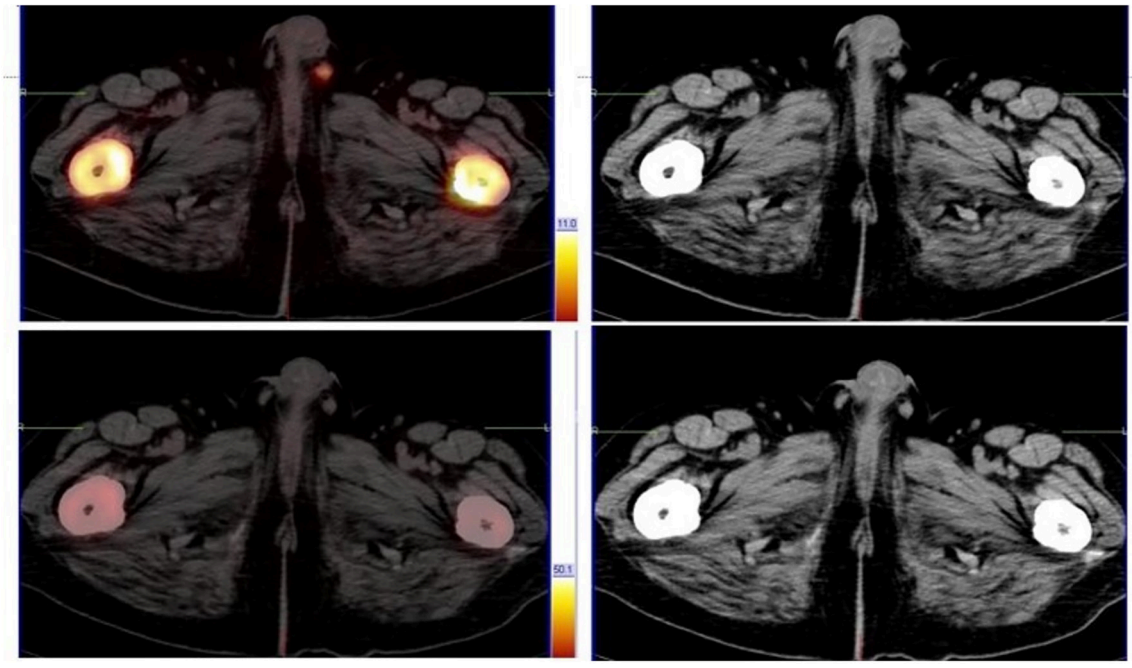

**Figure 3.** $^{18}$F PET/CT and CT only images of the same patient. The images in the top row reveal increased PSMA expression in the left spermatic cord (SUV: 6.06), with no obvious CT changes. The images below are after 4 cycles of 177Lu-PSMA radioligand therapy, which demonstrate complete resolution (SUV: 1.39). Metastatic spread of prostate cancer to the spermatic cord is extremely rare, with Gergelis et al. (7) reporting the third case in the literature in 2019. Similar to renal metastases, there are no obvious CT changes in the affected left spermatic cord to suspect metastatic disease.

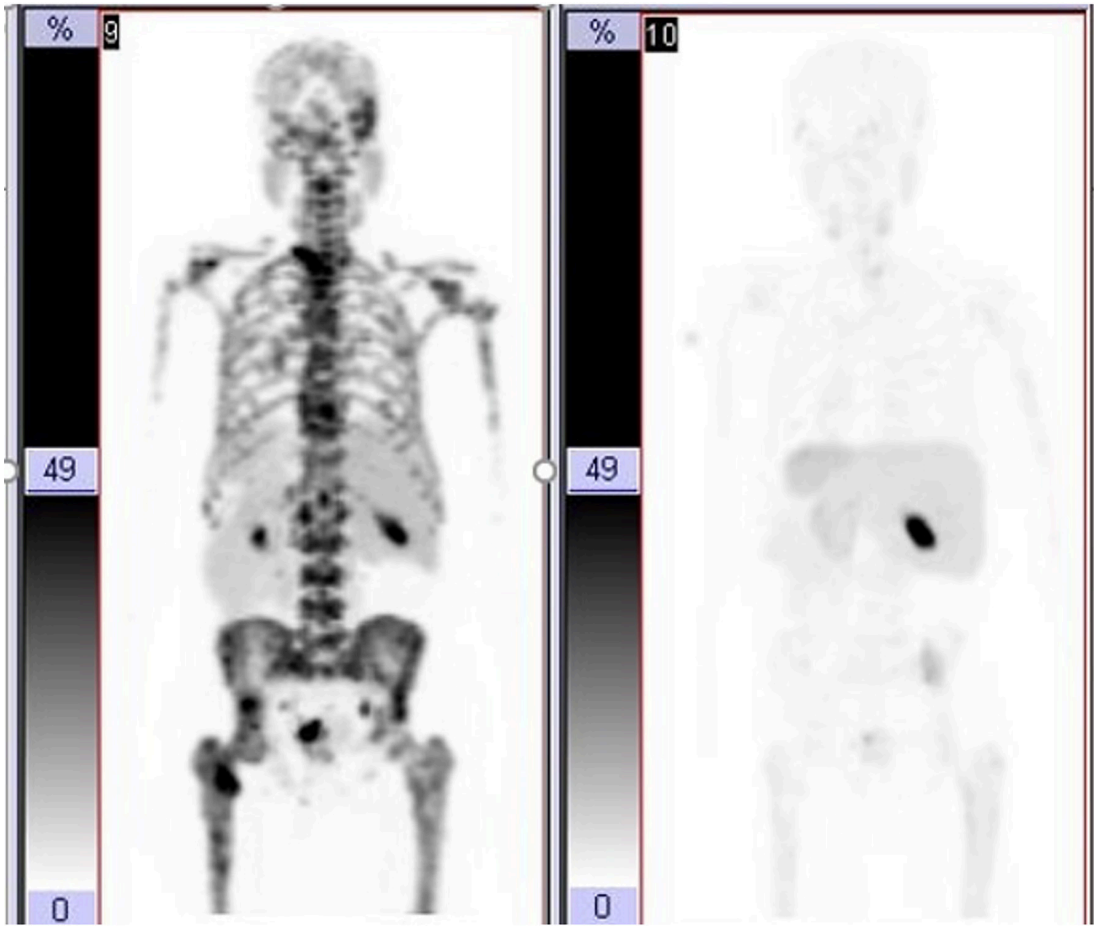


**Figure 4.** The image on the left is the patient's baseline maximum intensity projection (MIP) before 177Lu-PSMA therapy, showing widespread metastatic disease. The image on the right is an MIP image after radioligand therapy showing evidence of response to treatment. His PSA level pre and post therapy was 4,441 ug/L and 55 ug/L, respectively. The value of $^{18}$F-PSMA PET/CT imaging has also been shown here because some of these atypical sights might have been missed on anatomical imaging because of little or no obvious anatomical changes. The testes and urethra are also known atypical sites for metastatic disease (8); however, this was absent in our patient. This case also shows the effectiveness of radioligand therapy with 177Lu-PSMA, even in patients with an atypical pattern of metastatic disease. Although we do not have histological confirmation of these atypical metastatic sights, the fact that they were associated with high PSMA expression that showed a very good response to 177Lu-PSMA therapy gives us a very high index of suspicion for metastatic disease.

### Ethics

**Informed Consent:** Informed consent was obtained from the patient.

### Authorship Contributions

Surgical and Medical Practices: O.E., Concept: O.E., G.E., Design: O.E., W.E., T.T., Data Collection or Processing: O.E., W.E., T.T., Analysis or Interpretation: O.E., W.E., T.T., G.E., Literature Search: O.E., Writing: O.E.

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

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