Interesting Image
Mol Imaging Radionucl Ther 2023;32:244-246 DOI:10.4274/mirt.galenos.2023.03780

Isolated Castrate-resistant Prostate Cancer Metastasis to Both Adrenal Glands Detected on ^{68}Ga PSMA PET/CT

^{68}Ga PSMA PET/BT'de Her İki Adrenal Bezde Saptanan İzole Kastrasyon Dirençli Prostat Kanseri Metastazı

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Abstract

A 61-year-old male patient, who had undergone radical prostatectomy, underwent ^{68}Ga labeled prostate-specific membrane antigen (PSMA) positron emission tomography/computerized tomography (PET/CT) for evaluation of suspected biochemical recurrence of prostate cancer (PCa). PET/CT scan showed increased ^{68}Ga PSMA expressions in hypodense mass lesions in both adrenal gland localizations. An adrenal gland tru-cut biopsy was performed for the right side, which showed poor-differentiated carcinoma metastases associated with the patient's high-grade PCa. As far as we could determine based on an extensive literature search, this is the second case in which isolated adrenal metastasis was detected by ^{68}Ga PSMA PET/CT study in a patient with PCa.

Keywords: Prostate cancer, ^{68}Ga PSMA PET/CT, adrenal metastasis

Öz

Radikal prostatektomi geçirmiş 61 yaşındaki erkek hastaya, şüpheli biyokimyasal prostat kanseri (PCa) nüksünün değerlendirilmesi için ^{68}Ga etiketli prostat spesifik membran antijeni (PSMA) pozitron emisyon tomografisi/bilgisayarlı tomografi (PET/BT) yapıldı. PET/BT taraması, her iki adrenal bez lokalizasyonunda hipodens kitle lezyonlarında ^{68}Ga PSMA ekspresyonlarında artış gösterdi. Sağ taraf için, hastanın yüksek dereceli PCa'sı ile ilişkili kötü diferansiye karsinom metastazları gösteren bir adrenal bez tru-cut biyopsisi yapıldı. Geniş bir literatür taraması ile tespit edebildiğimiz kadarıyla bu, PCa'lı bir hastada ^{68}Ga PSMA PET/BT çalışması ile izole adrenal metastaz saptanan ikinci olgudur.

Anahtar kelimeler: Prostat kanseri, ^{68}Ga PSMA PET/BT, adrenal metastazı

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Received: 01.05.2022 **Accepted:** 15.02.2023

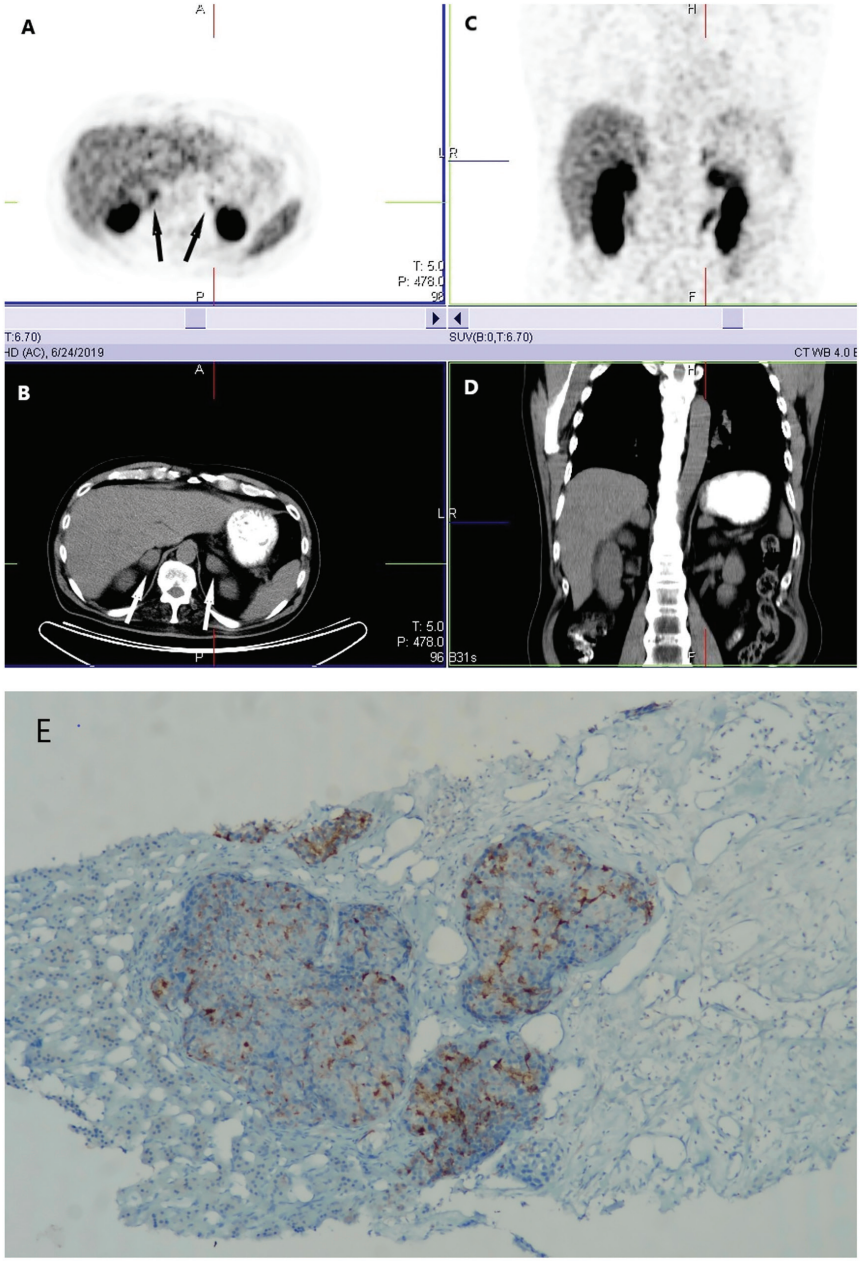

Figure 1. A 61-year-old male patient was admitted to our positron emission tomography/computerized tomography (PET/CT) unit for evaluation of suspected biochemical recurrence of prostate cancer (PCa) in June 2019. The patient had undergone radical prostatectomy in February 2017 and had been treated with adjuvant chemotherapy and external radiotherapy for Gleason 4+5 grade and T3BN1M0 stage prostate adenocarcinoma. He has been followed by androgen deprivation therapy. After a recent elevation in his prostate specific antigen (PSA) levels, the patient was scanned with ^{68}Ga labeled prostate-specific membrane antigen (PSMA) PET/CT. Axial **(A, B)** (arrows) and coronal **(C, D)** slices of PET and CT showed increased ^{68}Ga PSMA expressions in hypodense mass lesions in both adrenal gland localizations [maximum standardized uptake value (SUV_{max}) for right adrenal gland: 7.3, SUV_{max} for left adrenal gland: 4,6]. Other than those, there were not any other pathological findings. The results were found suspicious for metastatic involvement, hence magnetic resonance imaging scan was performed. It identified metastatic mass lesions in the adrenal glands; 40x18 mm. on the right and 32x20 mm on the left side. An adrenal gland tru-cut biopsy was performed for the right side, which showed poor-differentiated carcinoma metastases associated with the patient's high-grade PCa. A tumoral infiltration containing solid groups of prominent macronuclei is seen in the fibrous desmoplastic stroma (E; 100x high-power field). While immunohistochemical staining in tumoral cells was positive for PSA, it was negative for inhibin, Melan A, and Pax 8. The tumor is surrounded by adrenal cortical tissue. Adrenal metastasis of PCa is relatively rare when compared to

the other visceral metastatic sites and is detected in 13-15% of metastatic cases (1,2). In an analysis of 74,826 patients with metastatic PCa, kidney, and adrenal were involved in 0.3% of patients with a single-site metastasis (3). Detection of single-site metastasis of the adrenal gland is crucial, since metastasectomy may provide a durable biochemical response, and improve progression-free survival in men with oligometastatic PCa (4).

PET/CT scan with ^{68}Ga PSMA, owing to its exquisite sensitivity in the detection of PCa metastases, has gained widespread use for the evaluation of PCa in recent years. ^{68}Ga PSMA uptake can exhibit physiologic uptake in adrenal glands (5,6) and benign adrenal adenomas (7) causing misleading false-positive interpretations very rarely. Depending on the preliminary reports describing PSMA expression in adrenocortical carcinoma, this type of malignancy should also be taken into account while evaluating ^{68}Ga PSMA uptake in adrenal glands in PET/CT studies (8,9). As far as we could determine based on an extensive literature search, we found that there is only one report of single-lesion adrenal metastasis of PCa detected by ^{68}Ga PSMA PET/CT (10).

Ethics

Informed Consent: Patient consent for the diagnostic study was obtained.

Peer-review: Internally peer-reviewed.

Authorship Contributions

Concept: O.K., F.Ö., Design: O.K., F.Ö., Data Collection or Processing: O.K., F.Ö., T.A., Analysis or Interpretation: O.K., F.Ö., T.A., T.Ö., Literature Search: O.K., F.Ö., T.Ö., Writing: O.K., F.Ö., T.Ö.

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.

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