



Superscan Appearance of ⁶⁸Ga PSMA PET/CT in a Patient with Refractory Prostate Cancer

Refrakter Bir Prostat Karsinomu Olgusunun ⁶⁸Ga PSMA PET/BT'de Superscan Görünümü

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Abstract

A 64-year-old male patient with metastatic prostate carcinoma diagnosis received lutetium-177 prostate-specific membrane antigen (PSMA) treatment; however, his disease progressed. Herein, presented the final images of the patient that demonstrated a superscan appearance in the Gallium-68 PSMA positron emission tomography/computed tomography, which is a rare phenomenon.

Keywords: PSMA, ⁶⁸Ga, Lu-177, prostate cancer

Öz

Altmış dört yaşında erkek hasta metastatik prostat karsinomu tanısıyla lutesyum-177 prostat spesifik membran antijeni (PSMA) tedavisi almış ancak hastalığı progresyon göstermiştir. Bu sunumda bu hastanın nadir bir fenomen olan superscan görünümü oluşturan Galyum-68 PSMA pozitron emisyon tomografisi/bilgisayarlı tomografi görüntülerini paylaşmak istiyoruz.

Anahtar kelimeler: PSMA, ⁶⁸Ga, Lu-177, prostat karsinomu

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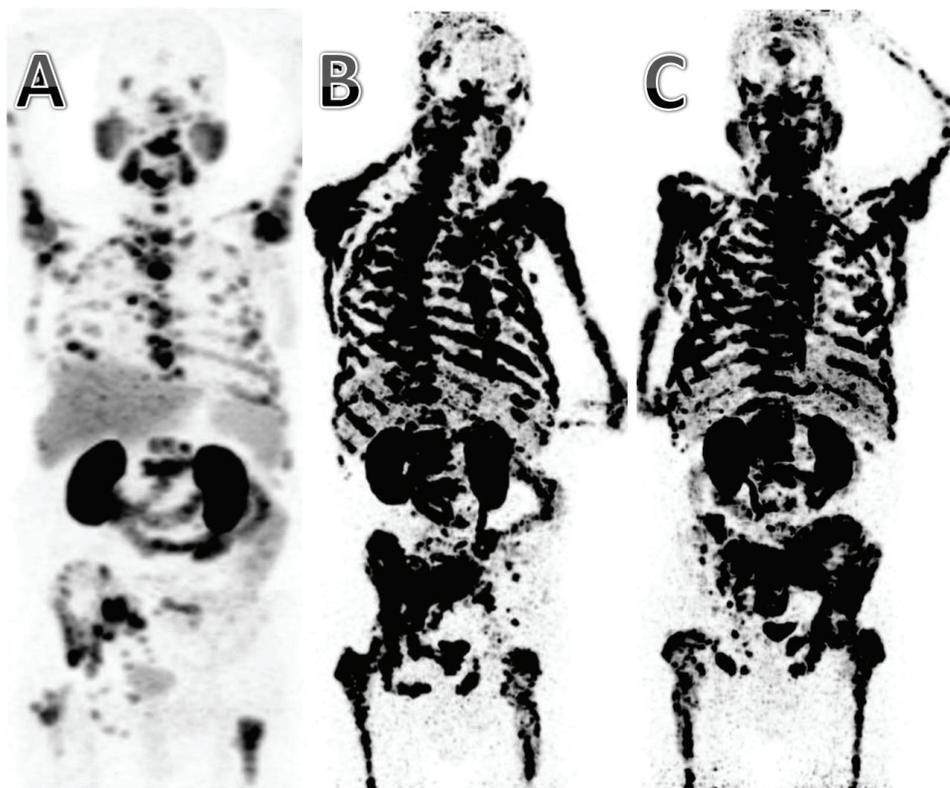


Figure 1. (A) A 64-year-old male patient with metastatic prostate carcinoma was subjected to Gallium-68 (^{68}Ga) prostate-specific membrane antigen (PSMA) positron emission tomography/computed tomography (PET/CT). The imaging was performed 60 min after intravenous administration of 5 mCi (435 mBq) Ga-68 PSMA in the craniocaudal direction in three-dimensional acquisition mode and 1 min per bed position with nondiagnostic CT scan for the attenuation correction. The ^{68}Ga PSMA imaging demonstrated disseminated disease involvement of the bone-bone marrow and multiple lymph nodes. The patient received multiple cycles of lutetium-177 (Lu-177) PSMA treatment. The patient had refractory disease, and 1 month after the last Lu-177 treatment, he was referred for the ^{68}Ga PSMA PET/CT for treatment response evaluation. Bilateral cervical, supraclavicular, axillary, mediastinal, and abdominal lymph nodes, pleural lesions, and bone-bone marrow infiltration were observed with significantly increased activity accumulation without non-lesion uptake except kidney and faint liver-spleen activity [(C, D) maximum intensity projection image of the ^{68}Ga PSMA PET/CT in the anterior and posterior projection, respectively].

Previous investigations demonstrated that superscan appearance is a consequence of the proportionally significantly increased metastatic lesions compared to normal tissues. Superscan was previously described in bone scintigraphy imaging, which is not a rare phenomenon for bone scintigraphy (1). However, this phenomenon is rare for ^{18}F -fluorine-fluorodeoxyglucose (^{18}F -FDG) PET/CT imaging (2,3,4,5). Only a few case reports were reported for the PET/CT with ^{68}Ga labeled radiopharmaceuticals. Chan and Schembri (6) reported a case presentation of both ^{68}Ga DOTATATE and ^{18}F -FDG PET/CT superscan. Another case report has demonstrated both bone scintigraphy and meta-iodobenzylguanidine superscan in the same patient (7). The only case report of skeletal superscan appearance in the ^{68}Ga PSMA PET/CT was presented by Agarwal et al. (8). To the best of our knowledge, this is the only report of a case with lymph nodes and skeletal superscan appearance in the ^{68}Ga PSMA imaging.

Ethics

Informed Consent: The informed consent of the patient was obtained.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: Z.P.K., P.P.Ö., V.E., M.R., Concept: Z.P.K., P.P.Ö., Design: Z.P.K., P.P.Ö., Data Collection or Processing: Z.P.K., P.P.Ö., V.E., M.R., Analysis or Interpretation: Z.P.K., P.P.Ö., V.E., M.R., Literature Search: Z.P.K., P.P.Ö., Writing: Z.P.K., P.P.Ö.

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