Accidental renal cell carcinoma detected on ^{68}Ga-Pentixafor PET/MR

Abstract

The value of gallium-68 (^{68}Ga)-Pentixafor positron emission tomography/magnetic resonance (PET/MR) image in renal carcinoma is unknown. Herein, we reported ^{68}Ga-Pentixafor PET/MR findings in a 47-year-old man with accidental renal carcinoma. Gallium-68-Pentixafor PET/MR showed a small nodule in the left kidney with iso-signal on T1WI and low signal on T2WI. This lesion had intense ^{68}Ga-Pentixafor uptake with a maximum standardized uptake value (SUVmax) of 7.05. This case suggested the potential of ^{68}Ga-Pentixafor PET/MR in the image evaluation of renal carcinoma.

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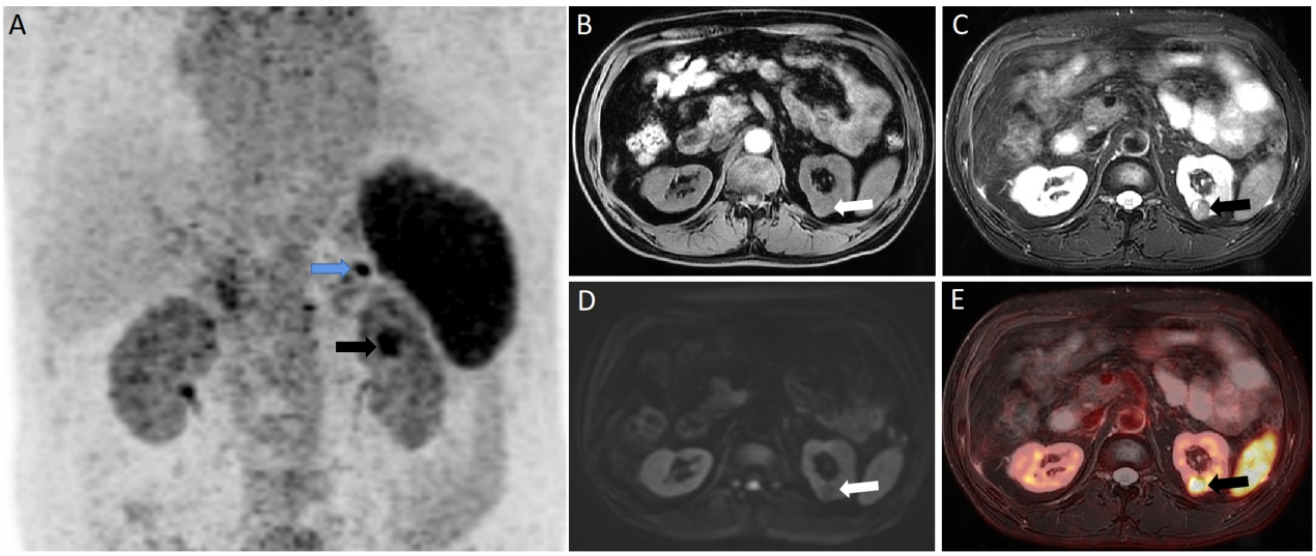

Figure 1. A 47-year-old man was diagnosed with primary aldosteronism for 20 days. Gallium-68-Pentixafor PET/MR image was performed for etiological evaluation. Abdominal MIP image (A) showed a solitary nodule in the left adrenal area, with a SUVmax of 7.13 (blue arrow). This lesion was regarded as aldosteronoma. Surprisingly, MIP image also showed a lesion with increasing ^{68}Ga-Pentixafor uptake (SUVmax: 7.05) in the left kidney area (black arrow). This lesion, with a diameter of 19mm, had iso-signal on T1WI (B), low signal on T2WI (C) and DWI (D). Positron emission tomography/MR fusion image (E) indicated this lesion in the left renal had intense ^{68}Ga-Pentixafor uptake. A primary renal tumor was suspected. Then, he underwent surgical resection. The postoperative pathology supported a diagnosis of renal clear cell carcinoma. Positron emission tomography tracers, including ^{68}Ga- prostate-specific membrane antigen (PSMA), ^{68}Ga-fibroblast activation protein inhibitor (FAPI) and fluorine-18-fluorodeoxyglucose (^{18}F-FDG) have shown potential in the evaluation of renal carcinoma [1-4]. It has been reported that ^{68}Ga-Pentixafor PET image can be used for stage, restage and treatment response evaluation in different solid tumors [5-8]. However, ^{68}Ga-Pentixafor PET/MR image was rarely performed in renal carcinoma. Recently, Dreher et al. (2024) reported 4 cases of renal cell carcinoma with ^{68}Ga-Pentixafor PET/CT, presenting as 1 positive uptake and 3 negative uptakes [9]. This patient, in our case, had intense ^{68}Ga-Pentixafor uptake and no diffusion limitation on DWI. Previous research showed that a high level of CXCR4 was associated with poor overall survival and recurrence-free survival in renal cell carcinoma patients [10]. More prospective studies could explore ^{68}Ga-Pentixafor PET/MRI for renal cell carcinoma evaluation.

The authors declare that they have no conflicts of interest.

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Wei Zhang BS, Liu Xiao MD, Wenjie Zhang MD, Lin Li MD

Department of Nuclear Medicine, West China Hospital of Sichuan University, No. 37. Guoxue Alley, 610041 Chengdu, Sichuan province, P.R. China

Corresponding author: *Lin Li MD. Department of Nuclear Medicine, West China Hospital of Sichuan University, No. 37. Guoxue Alley, 610041 Chengdu, Sichuan province, P.R. China. E-mail: lilinhuaxi@sin.com. Wenjie Zhang MD. Department of Nuclear Medicine, West China Hospital of Sichuan University, No. 37. Guoxue Alley, 610041 Chengdu, Sichuan province, P.R. China. E-mail: zhang_wenjie@scu.edu.cn*