

Gastric signet ring cell carcinoma with ureteral metastasis as the first manifestation detected by ^{68}Ga -FAPI PET/CT

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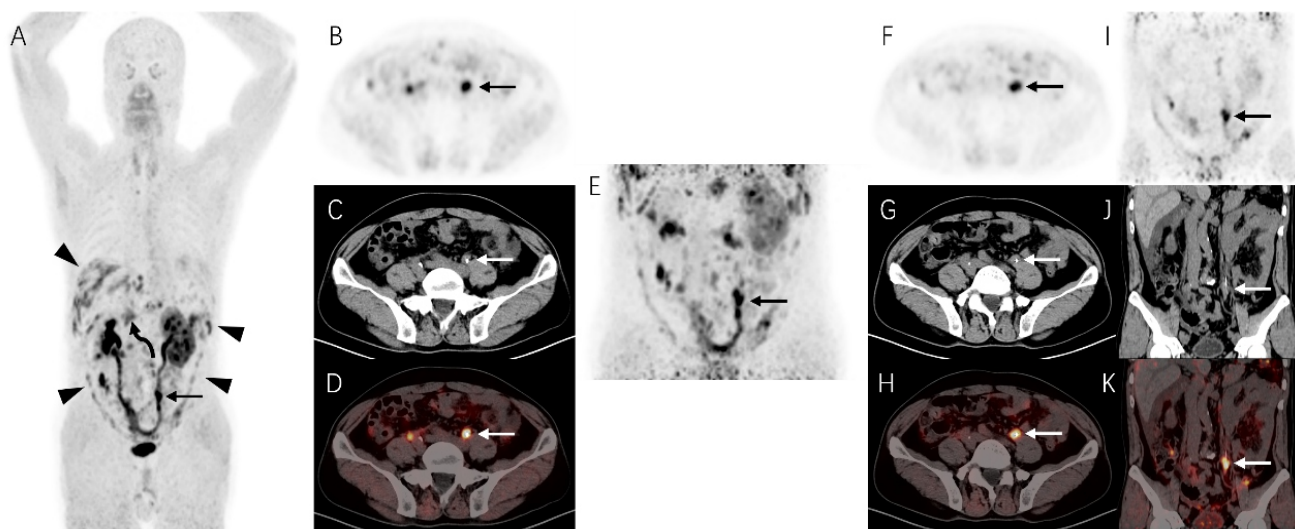


Figure 1. A 55-year-old man was admitted to the hospital due to left back pain for 2 weeks. Enhanced abdominal computed tomography (CT) suggested inhomogeneous thickening of the left ureteral wall with obvious enhancement, as well as peritoneal thickening, which suggested the possibility of left ureteral malignancy with peritoneal metastasis. However, the ureteroscopic biopsy was suggestive of signet ring cell carcinoma. With the consent of the patient, we enrolled him in a clinical trial of gallium-68-labeled fibroblast activation protein inhibitor 4 (^{68}Ga -FAPI-04) study in tumors. The maximum intensity projection (MIP) (A) and axial images (B-D) revealed increased FAPI uptake in the left ureteral wall (solid arrows; maximum standardized uptake value (SUVmax) of 14.1). Delayed images (E) after furosemide (intravenous injection, 10 mg) showed a clearer display of left ureteral lesion (solid arrows; SUVmax of 14.3) with less urinary impact (F-H: axial images; I-K: sagittal images). In addition, multiple thickenings of the peritoneum showed increased FAPI uptake (arrowheads; SUVmax of 13.8). Furthermore, a focus of elevated activity in the middle abdomen (curved arrows) was also noted on the MIP image.



Figure 2. On the selected axial images of abdomen (A-C) (left, positron emission tomography (PET); middle, CT; right, fusion image), the activity (curved arrows) corresponded to the thickened gastric wall at the gastric antrum (SUVmax of 6.9). Based on the PET/CT findings, gastric cancer with peritoneal and ureteral metastases was suspected. Subsequent gastroscopy showed an ulcer in the gastric antrum. Finally, the pathologic diagnosis was a gastric signet ring cell carcinoma (GSRCC). Gastric signet ring cell carcinoma is a poorly cohesive pathological type of gastric cancer, has a poor prognosis [1]. It is very rare for GSRCC metastasize to the ureter as the first manifestation, and it is very difficult to distinguish from primary ureteral tumors. It is well known that fluorine-18-fluorodeoxyglucose (^{18}F -FDG) uptake is low in GSRCC, leading to misinterpretation of lesions in sometimes [2]. Studies have shown ^{68}Ga -FAPI PET/CT to be a promising imaging modality for the detection of primary and metastatic disease in GSRCC[3]. Our case demonstrates that for metastatic signet ring cell carcinoma, ^{68}Ga -FAPI might be helpful in finding the primary lesion. In addition, delayed imaging is also helpful in the detection of ureteral lesions.

The authors declare that they have no conflicts of interest.

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