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CLINICAL IMAGE

Clear cell renal cell carcinoma located in sinus renalis confused with renal pelvis mass in image

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A 58-year-old Chinese woman presented with a mass in right renal pelvis incidentally detected by ultrasonography (Fig. 1A). No positive signs were found by physical examination, and urinalysis was also normal. Enhanced computed tomography (CT) of abdomen displayed a polycystic mass of 2.3 cm × 2.1 cm × 1.6 cm in right sinus renalis (Fig. 1B and C) with ample blood perfusion in arterial phase (Fig. 1B) and less perfusion in venous phase (Fig. 1C). CT images of excretory phase were not obtained. A retrograde pyelography was then performed and did not find a defined mass image in the pelvis (Fig. 1D). Urinary cytology was negative from three urine samples including one pelvic urine sample. Our preliminary diagnosis was renal cell carcinoma (RCC) in right renal pelvis. We decided to perform laparoscopic nephroureterectomy for radical incision of the tumor. During operation we ligated the ureter first to prevent the dissemination of transitional cell carcinoma. Incision of the removed kidney displayed a polycystic tumor with a complete psuedocapsule near the fat tissue in renal pelvis (Fig. 1E and F). Intraoperative findings supported the diagnosis of RCC. Pathological diagnosis was clear cell RCC (Fig. 1G), which invaded renal sinus (peripelvic) fat but not beyond the Gerota's fascia.

Before operation, solely based on the image of the mass filling the renal pelvis, it was difficult to be differentiated from transitional cell carcinoma. We specifically noticed the CT images that blood perfusion in the mass increased in arterial phase and quickly decreased in venous phase. Combined with other clinical evidences, we made the diagnosis of RCC. According to the 2014 EAU guidelines, CT urography should include images at excretory phase for the patients suspected of urothelial carcinoma [1]. As we know, transitional cell carcinoma in renal pelvic is intensified only slightly during enhanced CT scanning. Collecting duct carcinoma (CDC) tumors should also be considered when the mass is localized in sinus renalis. However, CDC is hypovascular and usually invades medullary area [2], but clear cell RCC is mostly hypervascular and often locates in cortex area. Therefore, if there is no proof for transitional cell carcinoma and the mass is intensified significantly during CT scanning, radical nephrectomy should be considered. Otherwise, ureterorenoscopy should be performed at first to avoid unnecessary nephroureterectomy [3].

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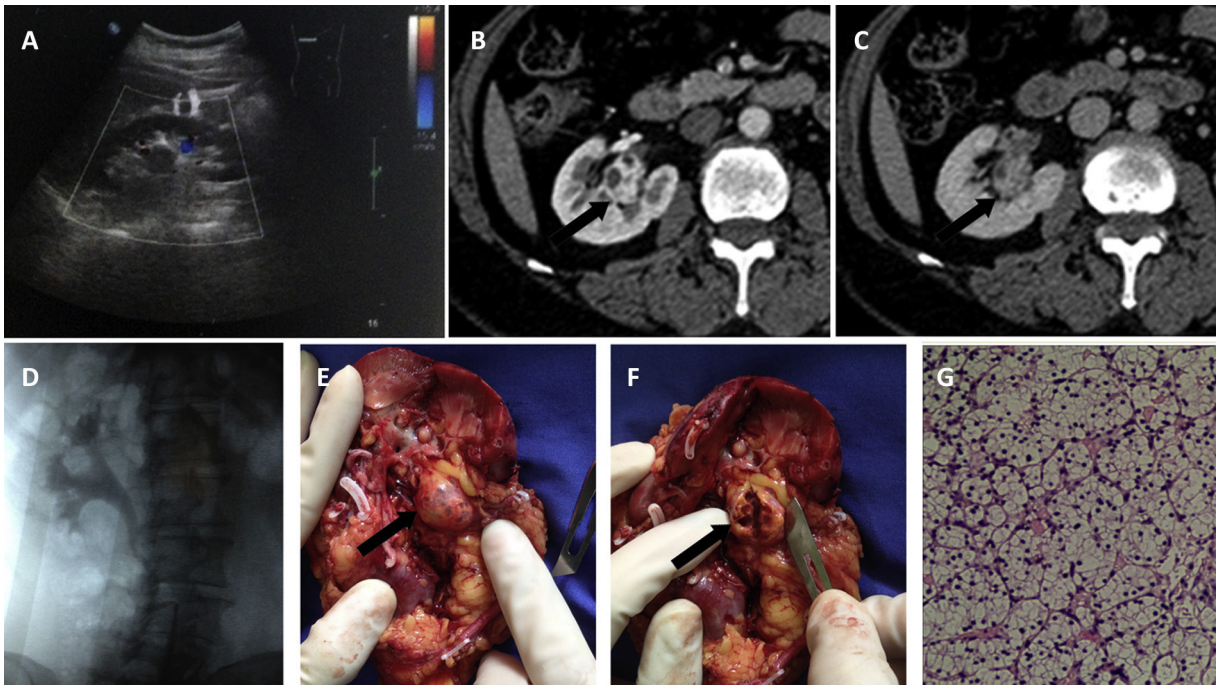

Figure 1 (A) Doppler ultrasonography clearly shows a hypoechoic cystic mass of 1.8 cm × 1.5 cm with clear margin and rich blood flow in color Doppler flow imaging (CDFI) in right renal collecting area. (B) Enhanced CT scan found an irregular mass of 2.3 cm × 2.1 cm × 1.6 cm (arrow) in right sinus renalis. The mass was intensified at arterial phase (202 HU). (C) The intensity of the mass reduced quickly at venous phase (132 HU). (D) Retrograde pyelography found no defined mass in renal pelvis. (E and F) Incision of the removed kidney displays a polycystic tumor with a complete psuedocapsule originating from medulla near the fat tissue in renal pelvis. (G) HE staining confirms clear cell RCC of the sample, Furman II (200 × magnification). CT, computed tomography; HU, Hounsfield units; RCC, renal cell carcinoma.

Conflicts of interest

The authors declare no conflict of interest.

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