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Case Report

Left supernumerary kidney: A rare case presentation ☆,☆☆

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ABSTRACT

The supernumerary kidney is an extremely rare, congenital renal anomaly and there are less than 100 cases reported in the current literature. This renal anomaly has its own collecting system, blood supply and well-defined encapsulated tissue. We report a case of left supernumerary kidney and solitary cyst of left native kidney in a 51-year-old man.

Introduction

To our knowledge, supernumerary kidney is an extremely rare, congenital renal abnormality and there are less than 100 cases reported in the current literature [1]. A first case of supernumerary kidney was described originally 364 years ago by Martius in 1656. A second case of supernumerary kidney was described by Blasius in 1677 [2]. Supernumerary kidney is usually located on the left side and smaller compared with normal kidney. This renal anomaly has its own collecting system, blood supply, and well-defined encapsulated tissue. It may or may not be fused to the other kidneys by fibrous tissue or a parenchymal bridge [3]. We report a case of a left supernumerary kidney with solitary cyst of left native kidney.

Case presentation

A 51-year-old man presented with vague and intermittent left flank pain. His physical examination did not find any significant finding. Serum biochemical profile, routine blood analysis and renal function test were within normal limits. Ultrasonography of the abdomen revealed additional left kidney and solitary cyst of left native kidney. The color Doppler in-

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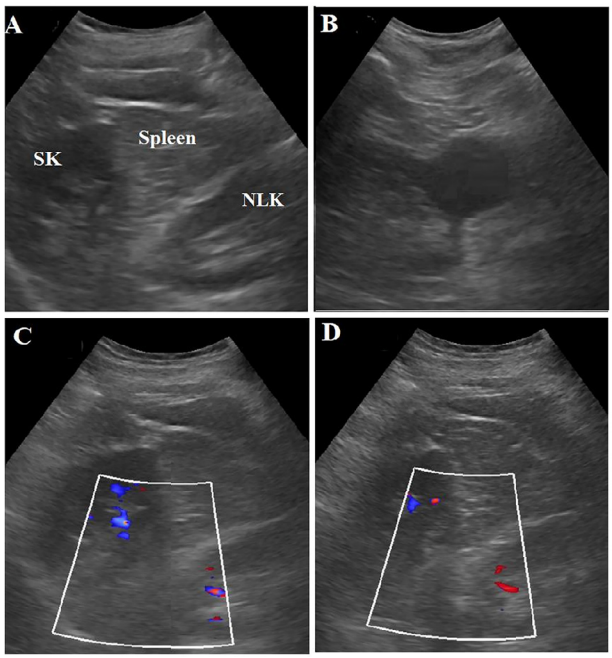

Fig. 1 – Gray-scale image if supernumerary and native left kidney with well-defined central hyperchoic renal sinus fat and hypoechoic peripheral parenchyma (A). Gray scale of solitary renal cyst of native left kidney (B) Doppler ultrasound images demonstrating separate vascular supply within both supernumerary left kidney and native left kidney (C, D).

vestigation showed the presence of blood flow within of both left kidneys (Fig. 1). The contrast-enhanced computed tomography demonstrated a normal right kidney measuring 10 × 4.9 cm and 2 left kidneys. The vascular supply to the right kidney was through a single main renal artery and renal vein without any anatomical variation. The cranially located native left kidney measured 9.8 × 4.6 cm, and the caudally located supernumerary left kidney measured 6.4 × 4.5 cm. These kidneys were not fused with each other and native kidney also have a solitary cyst in the lower pole, measuring 4.5 × 4.0 cm and not accumulating the contrast agent (Fig. 2). The cranially placed native kidney received its arterial supply from a branch of abdominal aorta at the level of inferior endplate of first lumbar vertebra (L1). The renal vein of left native kidney emerges from the renal hilum anterior to the renal artery and drains into the inferior vena cava at the level of second lumbar vertebra (L2). The caudally placed supernumerary kidney received its arterial supply from branch of abdominal aorta at the level of inferior endplate of third lumbar vertebra (L3) and drained through one renal vein into the inferior vena cava on the level of fourth lumbar vertebra (L4). All 4 kidneys had a normal excretory phase without delay in excretion of contrast agent. The right pelvicalyceal system and right ureter did not demonstrate any anatomical variation or pathology. The pelvicalyceal systems of both left kidneys were not dilated. The caudally placed supernumerary kidney showed a bifid ureter. The pelvicalyceal system of native left kidney was normally sited. The caudally located kidney was malroted, with pelvicalyceal system facing anteromedially. Ureters of both kidneys enter into the urinary bladder in according to Weigert-Meyer rule.

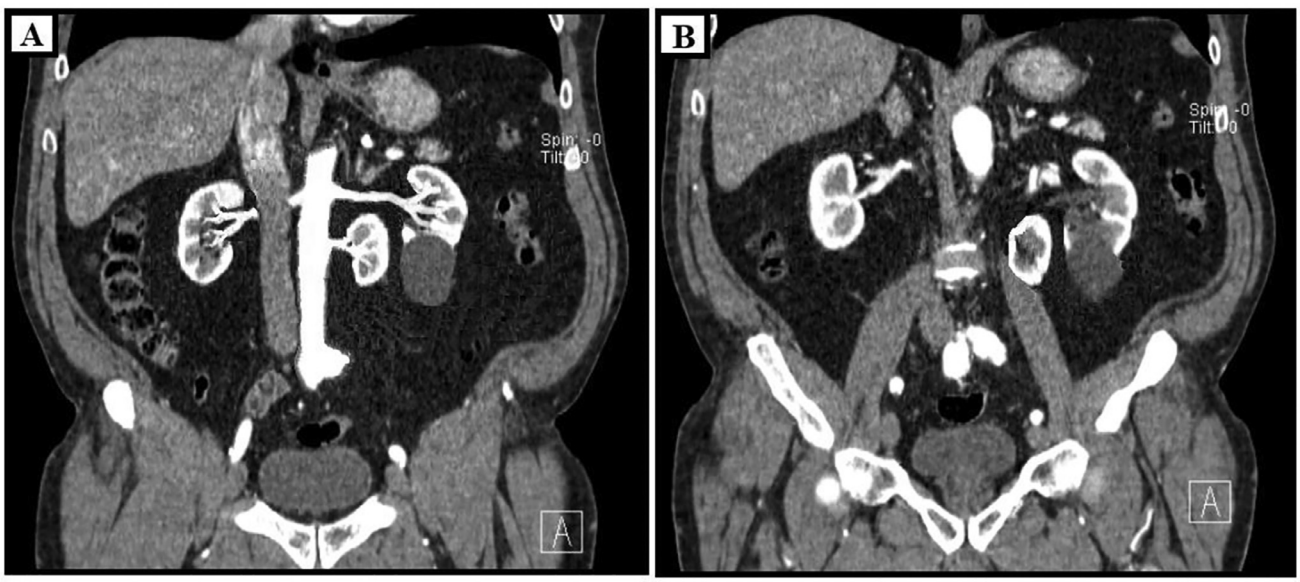

Fig. 2 – Coronal view computed tomography (CT) images in arterial phase of the kidneys demonstrates a native right kidney, as well as not fused with left native kidney the separate ectopic supernumerary left kidney which have own blood supply from aorta (A, B).

Discussion

The supernumerary kidney is an accessory organ with a separate collective system, arterial and venous supply, and well-defined encapsulated renal tissue [1]. Currently, there are several embryological theories of supernumerary kidney but none of them was finally proved. Generally, it is believed that supernumerary kidney is result of abnormal division of the nephrogenic cord into 2 metanephric blastemas that then form 2 kidneys, in association with either a partially or completely duplicated ureteral bud at fifth to seventh week of gestation [4]. The supernumerary kidney is usually located on the left side as in our case and smaller compared to the ipsilateral kidney. In the literature, there are few reports of right supernumerary kidney with or without fusion to the ipsilateral kidney [1]. In very rare cases, supernumerary kidney is combined with horseshoe and other associated renal anomalies. The ureter of supernumerary kidney more frequently traverse as a bifid ureter but rarely may intersect independently as separate ureter, and drains to the urinary bladder by Weigert–Meyer principle [5]. The diagnosis of supernumerary kidney may be successfully established with utrasonography, computed tomography, magnetic resonance imaging. These imaging modalities are also useful for diagnosis of associated renal anomalies and pathological conditions such as hydronephrosis, pyonephrosis, renal, and ureteral calculi, as well as malignant and benign tumors. The main differential diagnosis of supernumerary kidney is duplex kidney. The supernumerary kidney has a completely separate parenchyma with a well-defined capsule, arterial supply, and venous drainage. Meanwhile, the duplex kidney has a single, continuous capsule and the same vascular supply, and both poles firmly attached to each other. The supernumerary kidney is commonly asymptomatic; however, abdominal discomfort, fever, hypertension, vague, and intermittent flank pain may be presenting symptoms [3]. The management strategy of supernumerary kidney will depend upon clinical symptoms and initial renal function.

Conclusions

A supernumerary kidney is rare renal congenital anomaly which can present as a palpable abdominal mass, with or without symptomatic urolithiasis, hydronephrosis, urinary tract infection, or renal tumors. The management of supernumerary kidney depends upon clinical symptoms and deterioration of kidney function. If the patient is asymptomatic, as in our case, regular follow-up may be recommended and no treatment is required.

Patient Consent

The patient confirmed his consense for the publication of the case report.

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