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Case Report

Unilateral renal agenesis, blind-ended ureter and ectopic ureterocele: An incidental finding on abdominal CT scan ☆

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ABSTRACT

Congenital renal anomalies are among the most common birth defects. They are often detected antenatally. If not, they can manifest in adulthood with variable clinical presentations. Herein, we present a case of a 72-year-old male patient who was incidentally found to have an extremely rare combination of urinary tract defects comprising: right-sided unilateral renal agenesis, blind ureter, and ectopic ureterocele.

Introduction

Unilateral renal agenesis (URA) is the congenital absence of one of the kidneys due to inadequate stimulation of the metanephric blastema by the ureteral bud during embryonic development [1]. If not detected antenatally, URA may remain undiagnosed until adulthood. It is generally asymptomatic in isolation due to compensatory hypertrophy of the contralateral kidney [1]. Nevertheless, if it is associated with other congenital abnormalities of the kidneys and urinary tract (CAKUT), which occurs in about one-third of cases, it can cause symptoms [2]. The most commonly associated CAKUT are vesicoureteral reflux (VUR), megaureter, and duplex collecting system [2]. Blind ureter, ectopic ureter, and ureterocele are rare associations, especially when co-existing together. To the best of our knowledge, a limited number of studies have reported the combined occurrence of URA, blind ureter, and ureterocele. Moreover, in only 2 of these studies was the ureterocele of the ectopic variant [3,4]. Herein, we present a case of a 72-year-old male patient who was incidentally found to have right-sided URA, blind ureter, and ectopic ureterocele. This case report aims to create awareness among physicians and radiologists of the possibility of this rare phenomenon to arise on imaging in asymptomatic individuals, even at an older age.

☆ Competing Interests: None.

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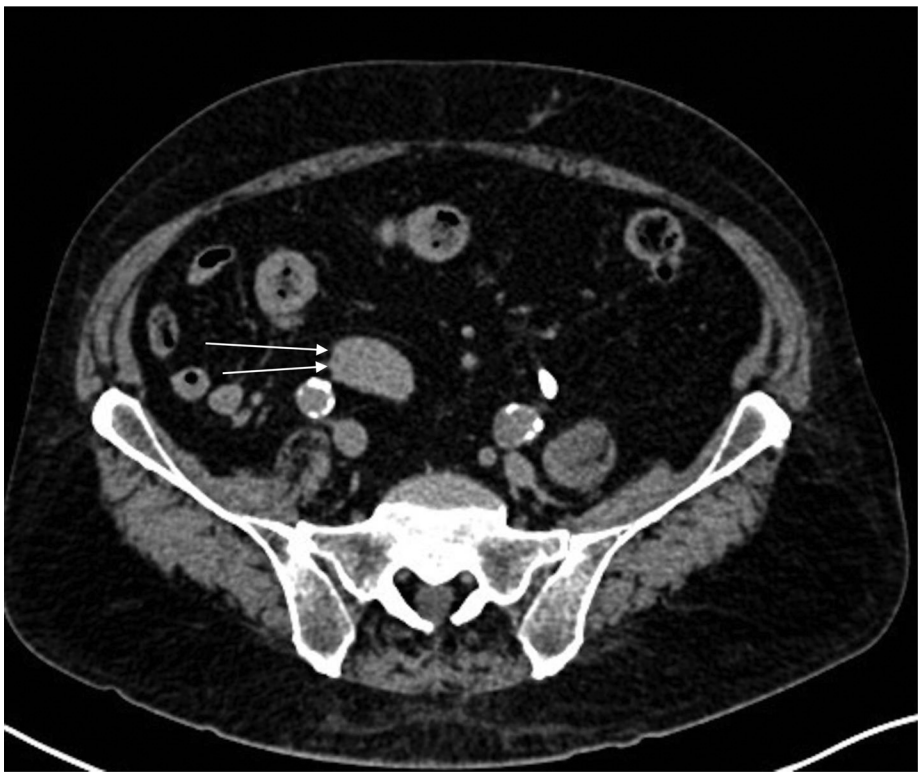

Fig. 1 – An axial CT image at the level of upper pelvis in the delayed phase shows a dilated blind ended right upper ureter which is seen anteromedial to the right iliac vessels. No right renal parenchymal tissue (absent right kidney).

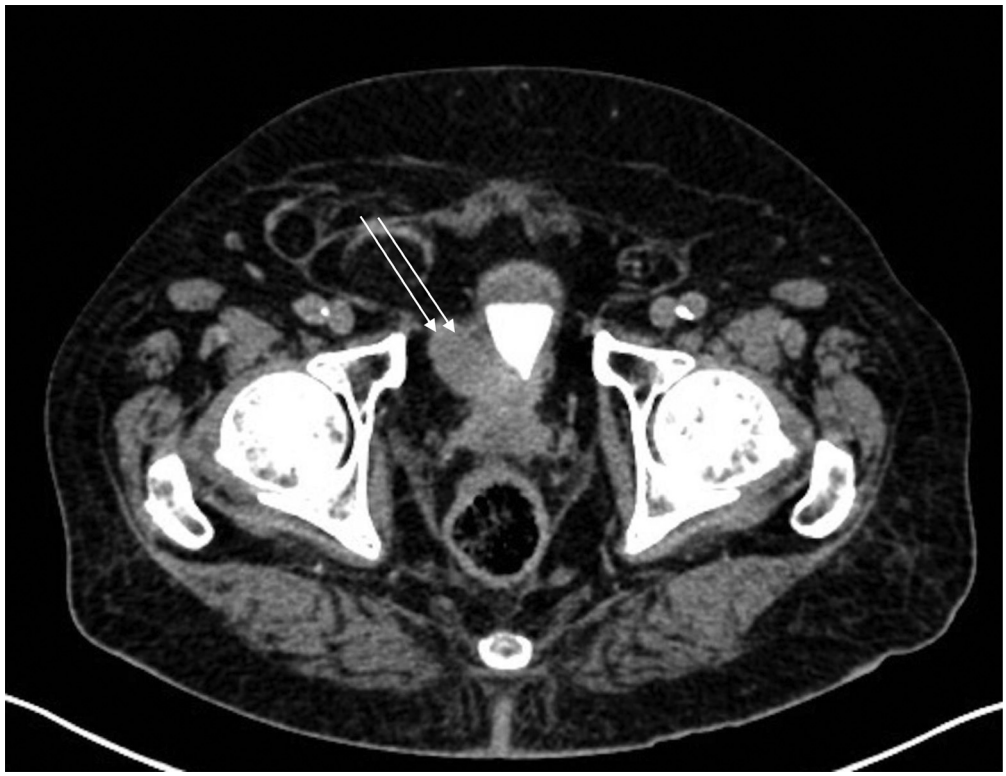

Fig. 2 – An axial CT image of pelvis in the delayed phase shows a blind ended dilated ureter (ureterocele) with an abnormal ectopic insertion between the urinary bladder and prostate.

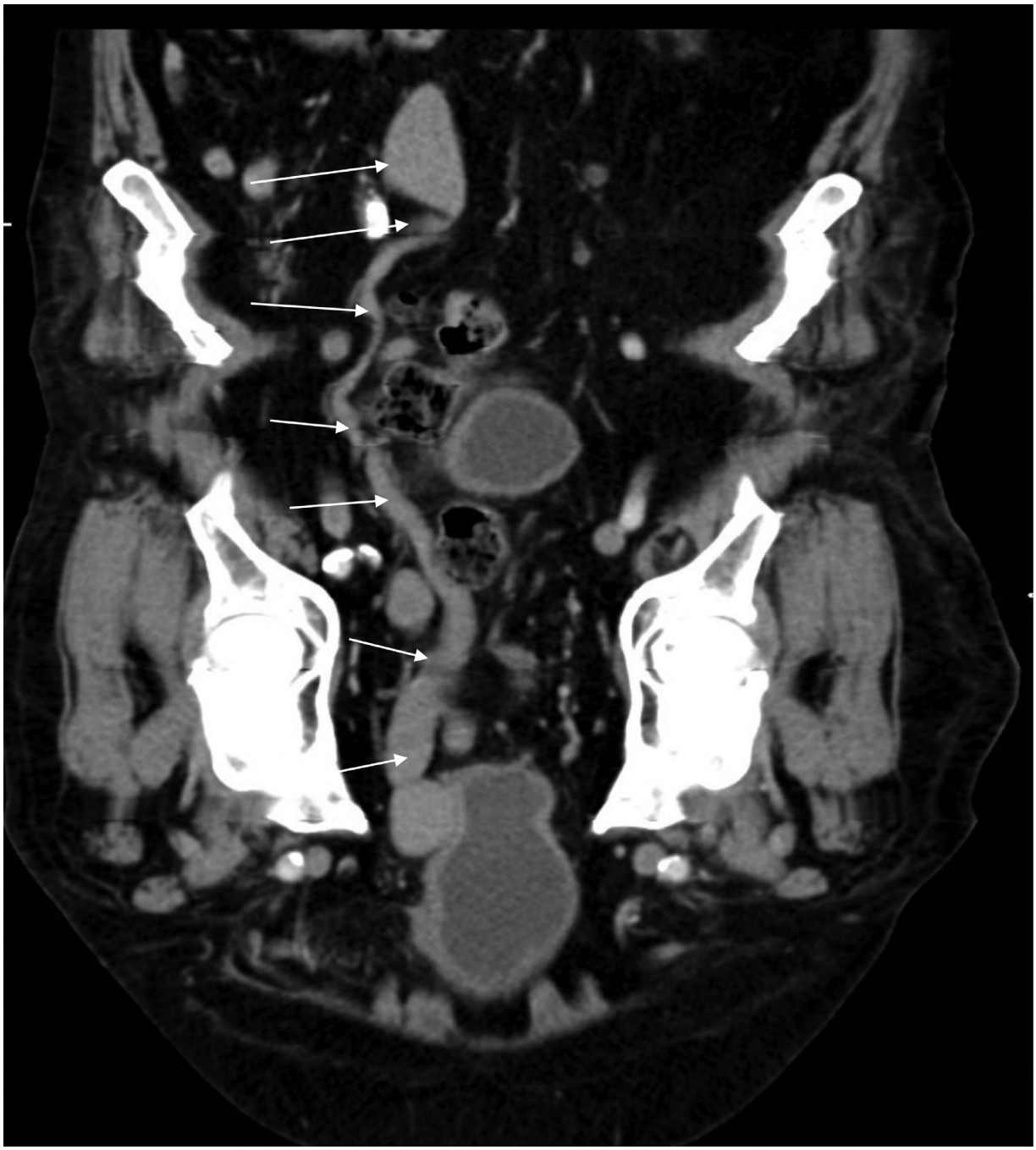

Fig. 3 – Reconstructed CT image tracking the course of the whole right ureter which appears markedly tortuous.

Case presentation

A 72-year-old patient with hypertension, benign prostatic hyperplasia, and newly diagnosed with adenocarcinoma of the lung, was referred to our clinic for a contrasted computer tomography scan (CT) of the chest, abdomen, and pelvis for lung cancer staging. The patient was vitally stable and was not in distress. The patient's medications included lisinopril, tamsulusin, lansoprazole, and aspirin. A complete blood test, electrolytes, and kidney function tests (Creatinine, Urea) were ordered, all of which came back within the normal range. Apart from lung carcinoma, no metastasis was detected. However, a group of urological defects were detected. The kidney was absent on the right side, with a dilated blinded-ended ureter (Fig. 1). In addition, a blind-ended dilated ureter (ureterocele) with an abnormal ectopic insertion between the urinary bladder and prostate was also detected (Fig. 2). A reconstructed version of the CT was done to track the whole right ureter which appears markedly tortu-

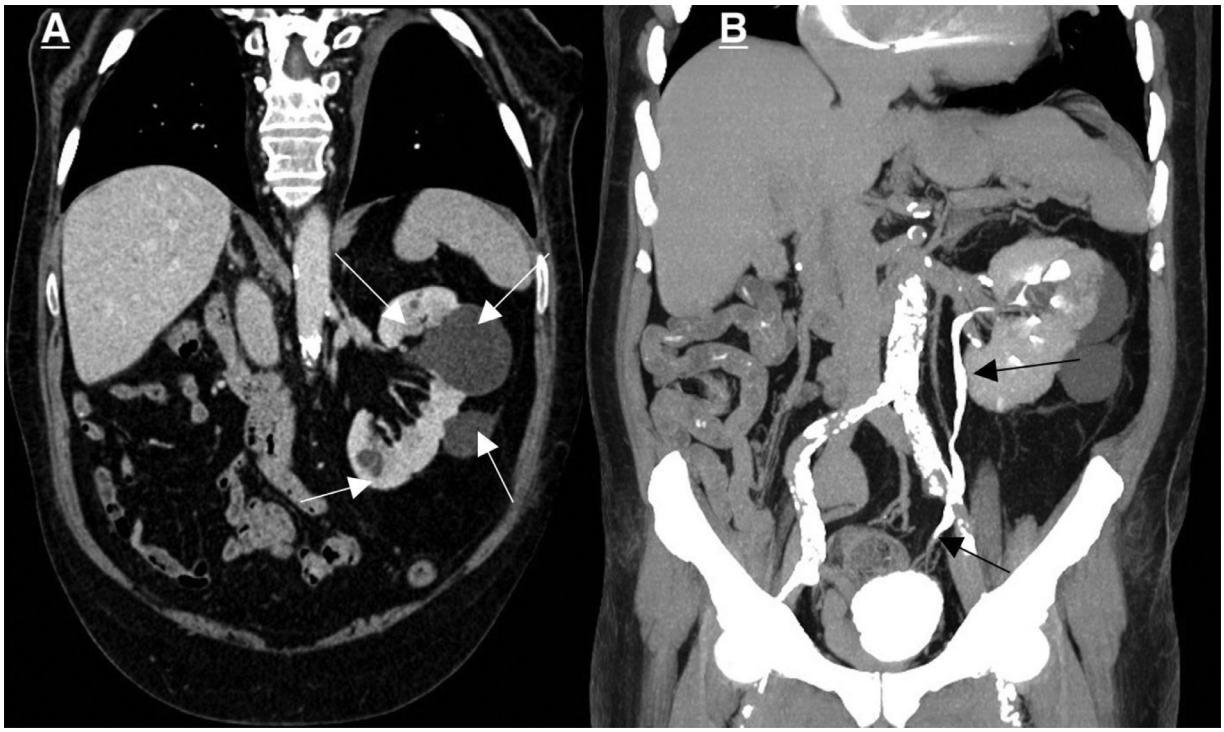

Fig. 4 – (A) Reconstructed image of the longest bipolar dimension of the left kidney in the venous phase shows a compensatory hypertrophy of the normally positioned left kidney which measures 13.5 cm in bipolar length. Note: multiple simple cysts of the left kidney are incidentally seen. (B) Coronal image in the delayed (excretory) phase shows contrast passing through the left ureter. Note: incidental finding of heavy calcific atheromatous plaques of the aorta and iliac arteries.

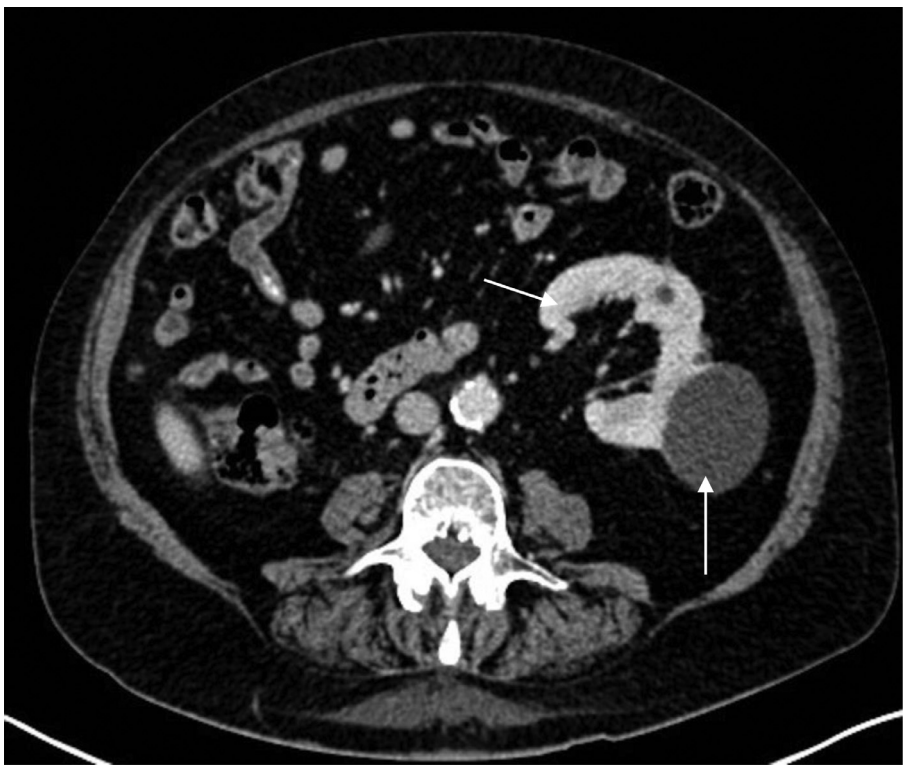

Fig. 5 – Axial contrast-enhanced image of the abdomen shows a normal position of the left kidney with left renal cysts.

ous (Fig. 3). A reconstructed version of the CT scan showed enlarged left kidney measuring 13.5 cm (as a compensation for the absence of the right kidney). Moreover, multiple simple renal cysts were detected incidentally as well (Fig. 4A). Coronal image in the delayed (excretory) phase shows contrast passing through the left ureter (Fig. 4B). Figure 5 shows an axial contrasted CT of the left kidney with a left renal cyst.

The patient denied any previous history of abdominal, flank, loin pain, or recurrent urinary infections. He has a previous history of a coronary artery bypass surgery and multiple cardiac catheterizations with 2 stent implantations. The patient was referred to the oncology clinic for further management.

Discussion

Congenital urogenital anomalies are among the most common birth defects [5]. Kidney is the most commonly implicated organ of the urogenital system. URA has an incidence of approximately 5 in 10,000 livebirths [6]. It more commonly occurs on the left and has a male propensity [2].

Ureters are normally implanted in the superolateral angle of the trigone of the urinary bladder. Ectopic ureter refers to a ureter that has been inserted outside of its natural anatomical location. It has an estimated prevalence of 1 per 2000 individuals [7]. On the other hand, an ureterocele refers to abnormal dilatation of the distal ureter, either entirely within the bladder (intravesical type) or extending into the urethra (ectopic type) [8]. Most ureteroceles, especially ectopic ureteroceles, are found in conjunction with a duplex collecting system [9]. Unlike renal agenesis, both ureterocele and ectopic ureter are much more common in females [4,6,10]. In addition, ectopic ureterocele is more often diagnosed in childhood [11]. This is in contrast to our case, wherein the patient is an elderly male with a single urinary collecting system.

Even though URA, ectopic ureter and ureterocele separately are not particularly unusual, the coexistence of a URA, blind ectopic ureter and ureterocele is exceedingly rare, especially in adults. What makes our case even more unique is that the ureterocele is of the ectopic variant, a combination which has been reported only twice in literature [3,4]. In one of the cases, this constellation of findings was identified as the cause of pelvic pain and urinary obstruction in a 20-year-old male patient [3]. The other case was of a 28-year-old man who presented with urinary tract infection (UTI) symptoms. Conversely, our patient was a 72-year-old man who was incidentally found to have these findings on abdominal CT.

Conclusion

The combination of URA, blind ureter and ectopic ureterocele is an extremely uncommon finding. Although it can present with variable symptomology (eg, pain, hematuria, or UTI symptoms), it can be found incidentally like in our patient. Raising awareness about such case emphasizes the wide spectrum of clinical and radiological variations for urinary tract anomalies.

Patient consent

Informed consent was obtained from the patient.

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