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Renal Ectopia at the University Hospital of Ouahigouya, Burkina Faso: Analysis of 4 Clinical Observations

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Abstract

Renal ectopia is a congenital kidney abnormality that can result either from a migration defect or from a shape or fusion anomaly. We report four cases of renal ectopia: one case of non-fused crossed renal ectopia, discovered due to mild lower urinary tract symptoms, which was monitored; and three cases of simple non-crossed renal ectopia. Of these three cases, one patient with grade I SFU (Society for Fetal urology) pyelic dilation was monitored, while the other two patients, who had grade IV SFU renal dilation, refused surgical treatment.

Keywords

Congenital Anomaly, Simple Renal Ectopy, Non-Fusion Renal Cross-Renal Ectopy, UroCT

1. Introduction

Renal ectopia is a congenital anomaly caused by a defect in migration, rotation, and sometimes fusion of the kidney during embryonic development. It is manifested by an abnormal position of the kidney, which can be located at the pelvic, iliac, abdominal, thoracic or contralateral level. It can be simple, involving a single ectopic kidney, or bilateral, and can also be crossed, with or without fusion. This malformation, relatively rare, especially in its crossed form, is generally asymptomatic and often discovered by chance during imaging for another reason. However, some forms can lead to urological complications, such as obstruction of the ureteropelvic junction, stone formation, or urinary infections. In 3 years of the

urology department's operation, we encountered 4 cases of renal ectopy diagnosed clinically and paraclinically. Through these four observations of renal ectopy, we aim to present the clinical, diagnostic, and therapeutic aspects of this condition and compare the data with the literature.

2. Patient Information and Clinical Presentation

2.1. Patient 1

The patient was a 72-year-old male seen for moderate lower urinary tract symptoms. He had no known medical history. The clinical examination revealed an enlarged prostate with a benign appearance. Ultrasound of the urinary tract showed a single right kidney with an estimated prostatic volume of 29 cc, homogeneous and regular, and a post-void residual of 41 cc. The uroCT scan favored an ectopic left kidney located in the right renal compartment without parenchymal fusion. The nephrogram of both kidneys was satisfactory. The patient received alpha-blocker treatment for his UAOS and was monitored for his non-fusion renal cross-ectopia. The patient comes back every 6 months for a check-up and doesn't have any complaints (Figure 1).

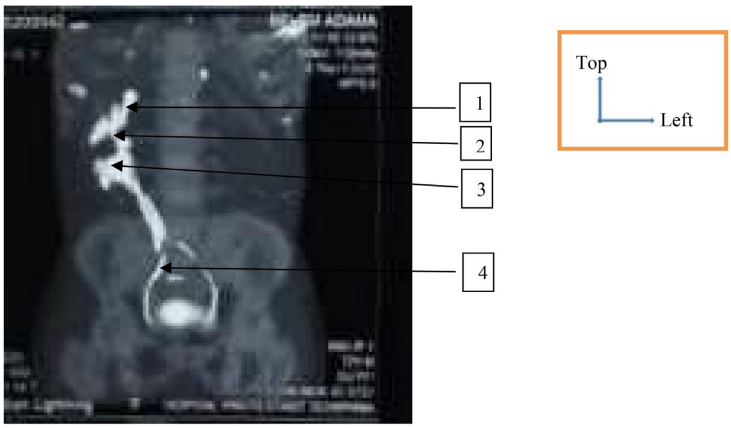


Figure 1. Frontal reformation at the excretory phase of a uroCT scan showing unfused renal cross-ectopy. 1. Right kidney, 2. Right ureter, 3. Left kidney in ectopic position under the right kidney, 4. Left ureter.

2.2. Patient 2

Patient, 26 years old, male, with no known pathological history, received for diffuse abdominal pain progressing by relapse for several months, in whom an abdominal-pelvic ultrasound performed in the periphery had revealed a right ectopic kidney. The patient was then referred to the urology department for better management. The physical examination revealed a small, deep, firm, well-limited, regular, mobile, and painless hypogastric mass. The serum creatinine was normal at 88 µmol/L. The uro-CT scan found a right kidney with a low lumbar position, with a pelvis in the iliac position, of small size. The right kidney parenchyma showed normal enhancement with a grade I SFU dilated pelvis without any visible obstruction. Its secretion and excretion were normal. The left kidney was normal.

We decided, in collaboration with the patient, to monitor since he was no longer symptomatic. Regular check-ups were done at the 3rd month and then at the 6th month. There were no complaints, and ultrasound probe checks at the department showed a stable pelvic dilation (Figure 2).

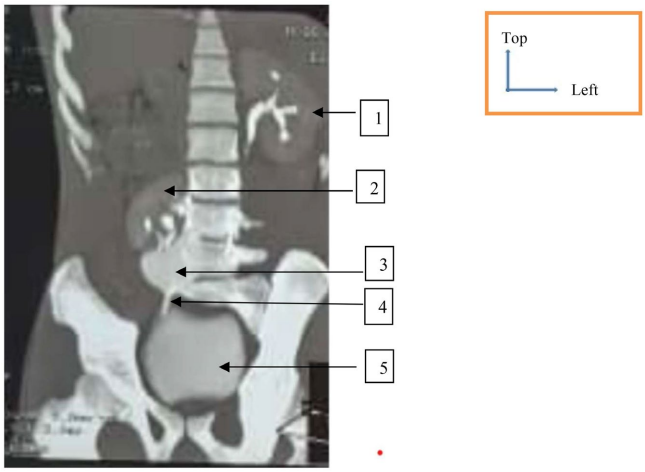


Figure 2. Frontal reformation in the excretory phase of a uroCT scan. Source: CHUR-O imaging department. 1. Left kidney, 2. Right kidney, 3. Dilated right pyelon, 4. Short right ureter, 5. Bladder.

2.3. Patient 3

The patient was a 29-year-old male patient with no known medical history, who had been receiving diffuse abdominal pain for one month. Physical examination revealed a firm, well-limited hypogastric mass that was not very sensitive to palpation. The serum creatinine was 117 µmol/L, within normal limits. The uroCT scan revealed a large left kidney with a pelvic topography ascending to the periumbilical with a grade IV hydronephrosis from SFU, with no visible obstruction. The right kidney was normal. We indicated a left nephrectomy, but the patient refused and has been lost to follow-up (Figure 3).

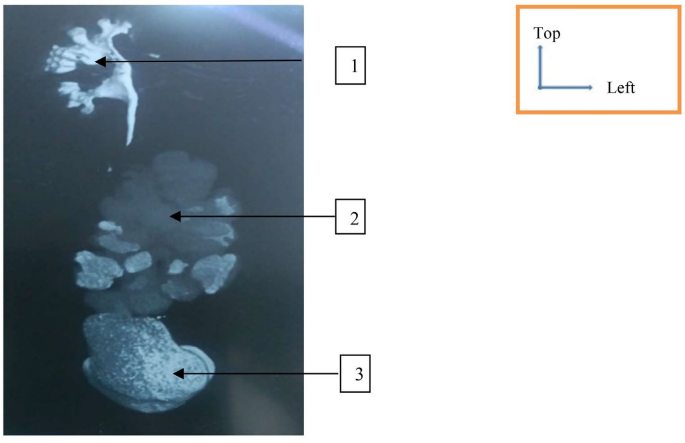


Figure 3. Frontal reformation in the excretory phase a uroCT scan in the late time. Source: CHUR-O imaging department. 1. Right kidney, 2. Ectopic left kidney, 3. The bladder.

2.4. Patient 4

It was a 22-year-old patient who was admitted to the urology department for a right hydronephrosis found on a follow-up ultrasound performed in a post-right ovarian cystomy context. The day's examination found a scar of the median subumbilical laparotomy with moderate pain on palpation of the right middle ureteral point. We had thought of a postoperative right ureteral ligation. The uroCT performed showed a left kidney with lumbar topography without abnormalities. An ectopic right kidney in an abdominal position, reduced to an oblong cystic mass with SFU grade IV dilation measuring 800 cc with parenchymal destruction. We indicated an exploratory laparotomy for suspicion of intraoperative ligation of the ureter. The patient and her family refused a second operation and at our instance the father asked for a period of reflection that continues. Since her discharge, the patient has been lost to follow-up (Figure 4 and Figure 5).

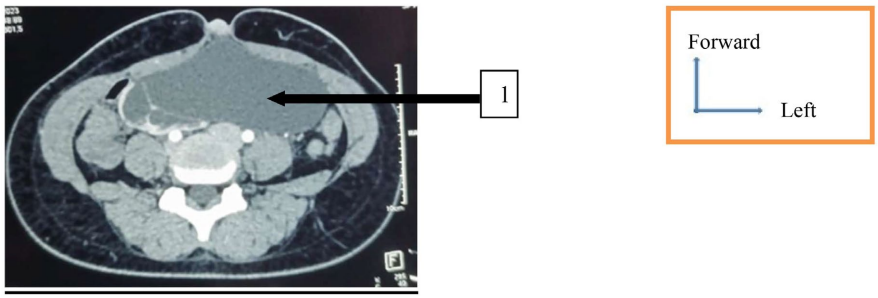


Figure 4. Axial section of the arterial series of a uroCT scan. Source: CHUR-O imaging department. 1. Ectopic right kidney.

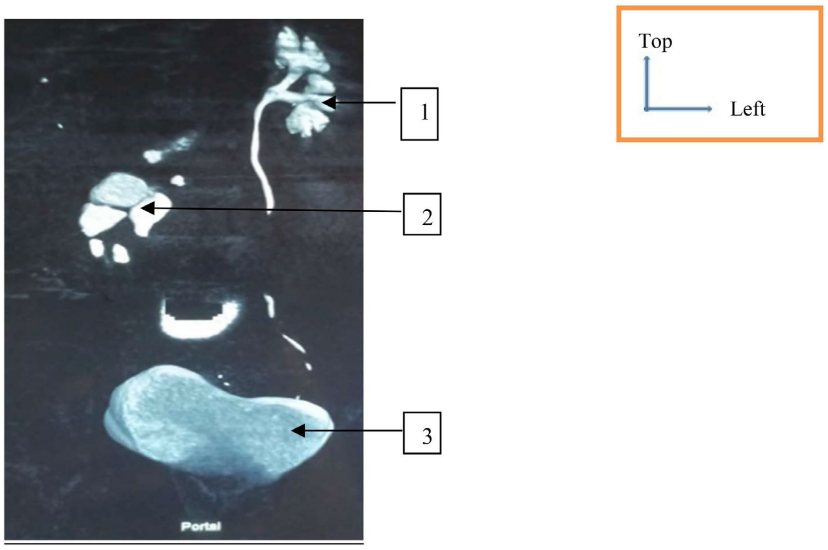


Figure 5. Frontal reformation in the excretory phase of a uroCT scan at a late time. Source: CHUR-O imaging department. 1. Left kidney, 2. Ectopic right kidney, 3. Bladder.

3. Discussion

The kidney derives the metanephrogenic blastema from the sacral region and then

migrates to the upper lumbar position, the definitive location of the kidney. During all these stages, various abnormalities can occur: shape and fusion abnormalities (cross renal ectopia and horseshoe kidney), migration abnormalities (simple renal ectopy, cephalic renal ectopy, thoracic renal ectopy), number abnormalities (renal agenesis, supernumerary kidney), rotation abnormalities, structural abnormalities (dysplasia, hypoplasia, cystic diseases).

In simple renal ectopy, the kidney can be in a pelvic, iliac, lumbar, or abdominal position [1]. A rare congenital anomaly, its incidence varies from 1/1200 to 1/500 and that of cross-renal ectopia is estimated at 1/7000, with absence of fusion in 10% of cases [1]. In 3 years of opening the urology department, we have diagnosed four cases of renal ectopy, *i.e.* an annual frequency of 1.33 cases per year comparable to that of Ogunbiyi OA in Nigeria [2]. Lagou D A *et al.* in 24 years have found 43 cases, *i.e.* an annual frequency of 1.79 cases per year [3]. This diagnostic rarity could be related to the fact that renal ectopy can remain asymptomatic for a long time and incidental discovery in most cases.

We encountered three cases of migration abnormalities of the simple renal ectopia type: a case of low lumbar localization with the pyelon in the iliac position (in front of the iliac vessels), a case of renal ectopia of pelvic topography going up to the periombilical region and a case of abdominal renal ectopia (location above the iliac crest). In the literature, pelvic ectopia is the most common form in 45% to 60% of cases, followed by iliac ectopia 20% to 30% [1].

We diagnosed a case of shape and fusion abnormality. It was a renal cross ectopy. A cross ectopic is when the kidney crosses the midline and is located on the other side. There are several theories as to the mechanism of occurrence of this anomaly. It could be a pressure distribution abnormality because of the umbilical artery that hinders the cephalic migration of the kidney for Wilmer [4]. For Alexander JC, the crossing could come from the ureteral bud that crosses the line and induces the differentiation of the contralateral nephrogenic blastema [5]**.** Isolated cases have been reported in many studies confirming the rarity of this anomaly. These were the isolated cases reported by Elbouti A *et al.* [6], Diallo O *et al.* [7]. who each reported a case of cross-renal ectopia with parenchymal fusion of the two kidneys. Our patient had renal ectopia without parenchymal fusion, which represents the rarest form, 10% of cross-ectopies.

Three (3) of our patients were young adults at the time of diagnosis (22 years, 26 years, 29 years) and all had simple renal ectopy. We recorded a 72-year-old patient with non-fusion left renal ectopy. The diagnosis at an advanced age could be explained by the fact that this abnormality can progress without symptoms. Cases have benefited from early discovery, 12 years for Bah F B *et al.* [8] and 5 - 6 years for Solanki S *et al.* [9]**.**

The sex ration represented three men for one woman (3H/1F). In the literature, renal ectopia occurs mainly in the male sex without any obvious explanation [1] [6] [7].

Long asymptomatic, renal ectopia can be discovered by chance on imaging performed for another pathology [6]-[8]. Also, during UAS, specific abdominal pain

or sometimes during atypical renal colic [5] [10]. The physical examination can be normal because a kidney even if it is poorly positioned can still retain its anatomical integrity and physiological functions. An abdominal mass may be recovered. The circumstances of discovery of unfused cross-renal ectopia in our case were symptoms of the lower urinary tract and in simple renal ectopiy, moderate abdominal pain in two cases. An abdominal-pelvic ultrasound requested in the first place had suspected the ectopic abnormality in all our patients because it revealed an empty renal compartment. The uroCT scan found:

- Emptiness of the left lumbar fossa in 2 patients:
- With a simple pelvic renal ectopia in one. This variant is the most common of the kidney migration abnormalities (**Figure 3**).
- In the other, an ectopic kidney crossed without parenchyma fusion with a left kidney located under the right kidney (**Figure 1**). The pyelocalicial cavities of the two kidneys as well as the two ureters were individualized and not dilated. This rare anomaly was the subject of a case study by Diallo O *et al.* in Mali in 2025 [7] and by Elbouti A [6].
- Emptiness of the right lumbar fossa was found in two (2) patients. One kidney was in a low lumbar position with one pyelon in a right iliac position (**Figure 2**) and the other in an abdominal position (**Figure 4**).

In some studies, MRI and 99mTc-DTPA and 99mTc-DMSA scintigraphy have also been diagnostic methods [11].

The biological assessment carried out on all our patients was unremarkable. We were unable to perform the scintigraphy on our patients because it was not available in the region.

Renal cross-ectopia without fusion was monitored because it was not symptomatic and there was no impact on the kidney. In the literature, it is recommended that therapeutic abstention be taken in the absence of obstruction [1] [8] [10] [12]. All three cases of simple renal ectopia presented obstructive signs. One patient had isolated pyelic dilatation in whom we also recommended monitoring. The other two patients had grade VI dilation. We have proposed surgical exploration and are still awaiting patient consent. This hesitancy may be related to the fact that both patients currently have no pain. Surgical treatment should be reserved for complications such as stone obstructions, pyeloureteral junction syndrome, vesicoureteral reflux or infection and should take into account the many anatomical and vascular variations in renal ectopias [1] [4] [5].

4. Conclusion

Renal ectopy is a rare anatomical anomaly whose origin is embryonic. It can be discovered by chance during an imaging examination whose purpose was not necessarily to explore the urinary tree. Depending on the shape and topography, it can be asymptomatic or lead to kidney failure. Its discovery makes it possible to accentuate monitoring and to plan early management in the event of the onset of symptoms.

Statement

The study had been approved by the CHURO's medical ethics committee.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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