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Case Report

Ectopic kidney: a rare case presentation

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ABSTRACT

The ectopic kidneys are a rare developmental disorder. The ectopic kidneys are the result of the cessation of normal migration. The incidence of ectopic kidney is 1/12,000 clinical cases and 1/900 post-mortem cases. Such kidneys may be asymptomatic, show vague symptoms, or remain undetected for life. However, early detection of ectopic kidneys can prevent long-term complications. Here were present a case of 17-year-old adolescent with an ectopic kidney presented with an episode of intermittent pain in her left umbilical region for one year. A physical examination revealed a tender lump in the umbilical region of the abdomen. The USG showed a mass on the left side of the umbilical region, which could be an ectopic kidney. Computer tomography showed an ectopic kidney in the midline of the umbilical region. In addition, DTPA scans of the kidney showed that the left kidney showed inadequate function with delayed upper inflow tract. Urinalysis revealed urinary tract infection. Patient had mild degree of anaemia with low serum iron levels. The ectopic kidney was removed and sent to us in our lab. Histo-pathological examination was done and it revealed normal parenchyma of kidney. Ectopic kidneys should be included in the differential diagnosis in patients with abdominal pain and palpable lump in the abdomen. Early detection can prevent long term complications.

Keywords: Ectopic kidney, Umbilical, Calculi, Nephrectomy

INTRODUCTION

Ectopic kidneys can manifest as abdominal pain and can predispose to genitourinary complications. Such kidneys can be present in the pelvis, ilium, lower back, abdomen or chest. There is a risk of hydronephrosis due to extrinsic compression of the renal pelvis or kinking of the ureter causing chronic discomfort or pain. Ectopic kidneys are also vulnerable to external trauma. Development of the kidney involves cranial migration to the normal retroperitoneal location of the kidney. Most cases of ectopic kidney remain asymptomatic for life, with clinical detection estimated to be 1 in 10,000 patients.[2] Early diagnosis of the ectopic kidney can prevent complications and reduce their long-term consequences and complications. Congenital malformations of the genitourinary system are estimated to be about 10% of all births. About 50% of these are upper urinary tract defects.[3] The kidney may be ectopic in itself (simple ectopic) or fused or unfused with the contralateral kidney pattern across the median (crossed ectopic). In general, the most common location within the pelvis is on the opposite side of the sacrum, below the aortic bifurcation.

In this report, we present the unusual case of abdominal pain in the left side of umbilical region in an adolescent female with a palpable ectopic kidney.

CASE REPORT

A 17-year-old adolescent presented with intermittent pain in umbilical region towards left side for one year. She complained of three episodes of pain previous month, each episode lasting several days. She consulted with a local doctor before visiting our hospital. The pain became more intense during the current episode that lasted for seven days. The pain started from the left side of the umbilical region. She described the pain as intermittent. There is a burning sensation. Her past medical history did

not contribute and she had no previous surgical history. When she was hospitalized, general physical examinations were within normal limits. Early vital signs such as blood pressure, pulse rate, respiratory rate, and body temperature were within normal limits. Physical examination revealed a palpable, moderately soft lump (7×10 cm) on the left side of the umbilical region. The lump was partially mobile. The other areas of the abdomen were soft and non-tender. The bowel sounds was normal.

Table 1: Complete blood count.

Parameters	Value
Hemoglobin	10.0 g/dl
Hematocrit	28.5%.
Total leukocyte count	10,000 cells/mm^3
Neutrophil	75.9%
Lymphocyte	15.4%
Monocyte	4.2%
Eoisinophil	4%
Basophil	0.5%
MCV	74 fl
MCH	24 pg
MCHC	30 g/dl

Table 2: Renal function tests.

Parameters	Value
Blood urea	15 mg/dl
Serum creatnine	0.51 mg/dl
Uric acid	4.2 mg/dl

Iron studies were done and they revealed low serum iron. Urinalysis revealed urinary tract infection. Midstream urine cultures were negative. Liver function tests were within normal limits. An abdomen and pelvis ultrasonography was performed, and the right kidney (length 90 mm, width 50 mm) was normally placed, but the left kidney could not be seen in the left renal fossa. Heterogeneous solid area measuring 9×7.5 cm was noted in the midline umbilical region, probably ectopic kidney. There were no signs of obstruction in the IVU. Renal DTPA (Pentetic acid or diethylenetriaminepentaacetic acid) scan was done and it showed that the left kidney was ectopic and present in the midline, showing poor function with delayed outflow tract. Right kidney function and upper outflow tract was normal and non-obstructive. The patient underwent surgery to remove the ectopic kidney (Figure 1).

The specimen was received in our lab and was processed. Grossly, the specimen was weighing 34.5 grams and measuring 7×4×3 cm. On appearance outer surface was greyish brown, discoid shaped and there was a tubular structure attached to one end measuring 2 cm (Figure 2). However well- formed pelvis could not be made out. No capsule and adrenal structures were found. On cut section the cortico-medullar differentiation could be made. Cortex measuring 4 cm and medulla measuring 3 cm (Figure 3). Sections were taken and the histological slides were examined, revealed normal glomeruli with some showing evidence of hyper-cellularity. However, no peri-glomeruli fibrosis, no interstitial inflammation is seen in the multiple sections examined. The renal tubules at places are showing focal evidence of cloudy swelling and tubulorrhexis. Broken tubular epithelial cells are seen occupying the lumen of tubules. The blood vessels are showing tunica medical and intimal thickening. The pelvi-ureteric junction is showing a cystic space lined by transitional epithelium with hyperplasia of lining epithelial cells. Surrounding the cystic space are the renal tubules showing evidence of myxoid degeneration. End arteritis obliterans is seen as well (Figure 4-6) Sections from the tubular structure show ureter lined by transitional epithelium. The lumen of the ureter is showing clusters of broken and degenerated epithelial cells (Figure 7).

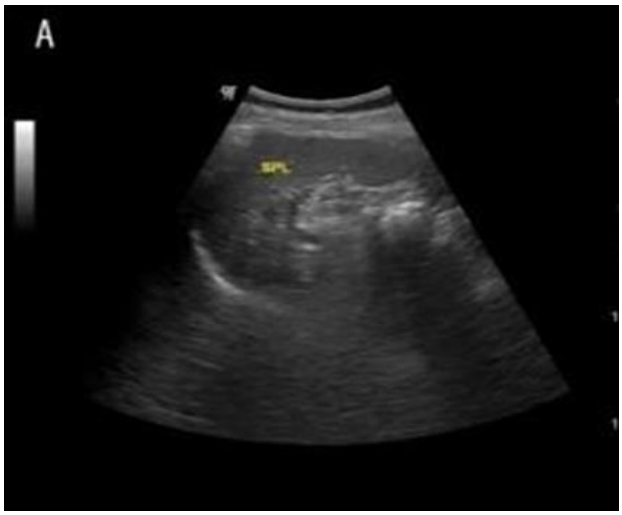

Figure 1: Transverse ultrasound of the left hypochrondrium showing absent kidney in theleft renal fossa, (SPL-spleen).

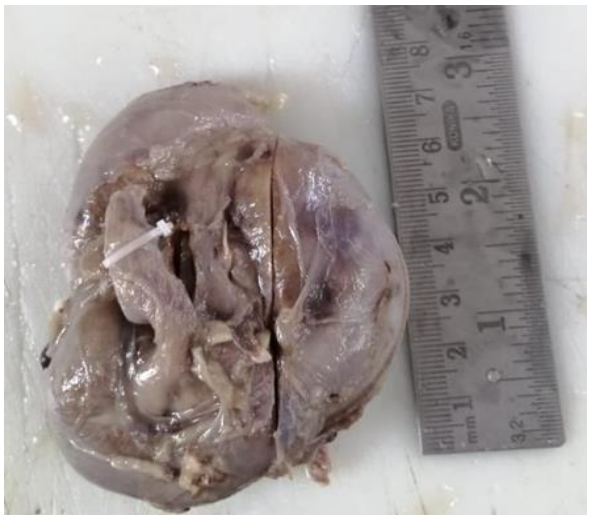

Figure 2: Grossly received specimen.

Figure 3: On cut section.

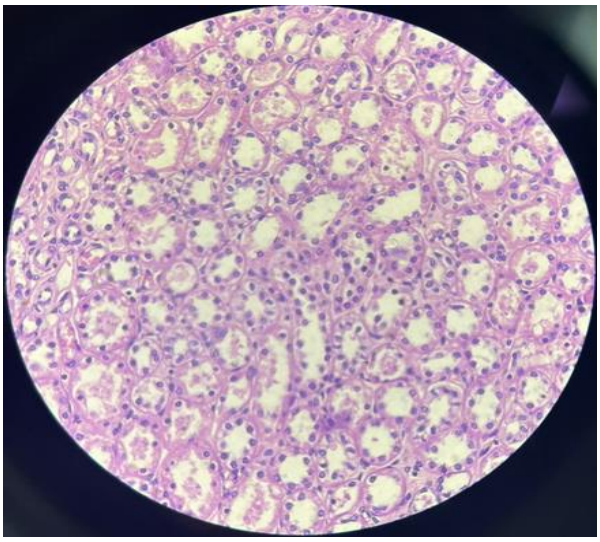

Figure 4: Section showing tubulorrhexis.

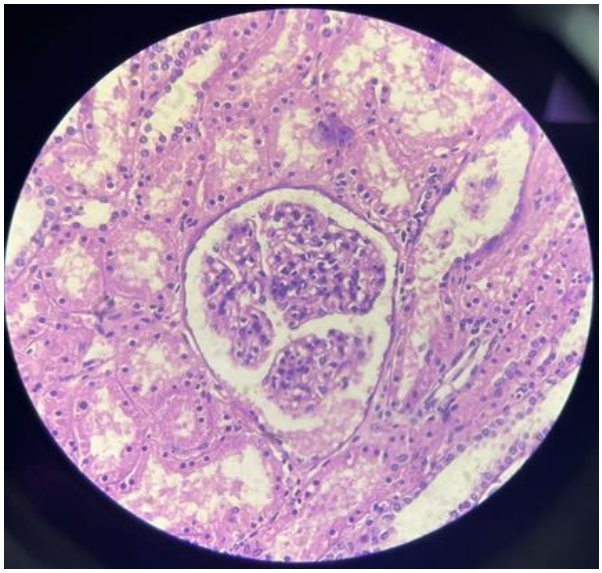

Figure 5: Glomerular hyperplasia (40x).

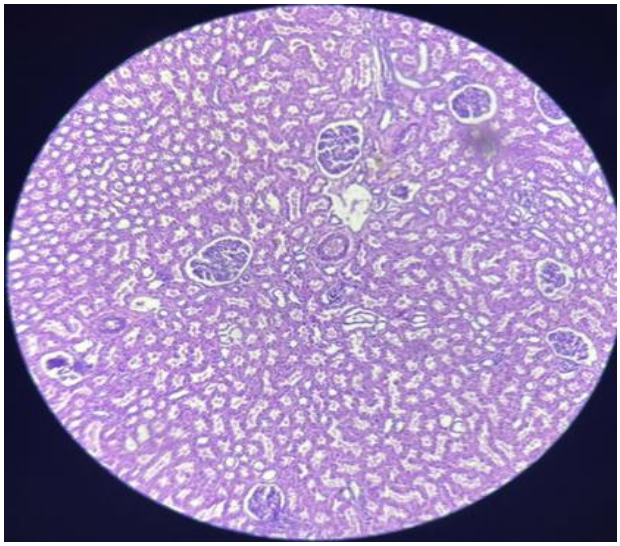

Figure 6: Renal parenchyma (10x).

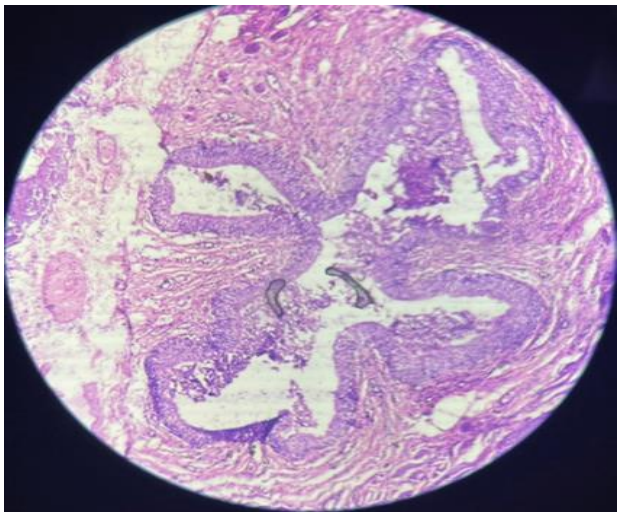

Figure 7: Ureter (40x).

DISCUSSION

The human kidney has a complex embryonic development system. The ectopic pelvic kidney is a rare abnormality at about 1/2500 births, with the left side being more common. This increases the frequency of congenital malformations. Related urinary abnormalities were found in 43% of children with renal ectopia.[1] Genitourinary malformations include obstruction of the ureteral pelvic junction, vesicoureteral reflux, ectopic ureter, vaginal atresia, and hypospadias.[5] However in our patient there was no other malformation noted. Clinical indicators of suspicion of ectopic kidney are low due to rare occurrences and vague symptoms. Like in our case the patient presented with dull intermittent abdominal pain which in itself has many differentials. The diagnoses in such cases become difficult. Our patient presented in adolescent age, whereas most of the cases of renal ectopic are diagnosed at the time of birth. In addition, the ectopic kidney is often associated with dysgenesis of the skeletal

and cardiovascular system, the gastrointestinal tract, and other systems, including certain other abnormalities; which were absent in our case.[6]

In a study done by Malek et al it was found that the most frequent presenting symptoms and signs was urinary tract infection seen in 44% and was present in our case as well.[4] Patient had abdominal pain and palpable mass which is seen in 23% and 19% of the cases respectively as concluded by the study. Microscopic haematuria 6%, incontinence 5%, hypertension 3% and renal insufficiency 3% are also seen in various cases. However, these findings were negative in our case. Classically, the size of the ectopic kidney is smaller, the renal pelvis and ureter having tortuosity. Tortuosity and kinking of the ureter predispose the ectopic kidney to obstruction or bacterial infection.[5] Like in our case the patient had pain in left side of umbilical region and urinary tract infection. Ectopic kidneys are predisposed to recurrent upper urinary tract infections due to the reasons discussed above. If clinically suspicious or accidental, the ectopic kidney is diagnosed by x-ray; ultrasonography followed by intravenous urography is the first test. In our case it was diagnosed by an ultrasound which was done to rule out the differentials of the abdominal pain and lump. Afterwards, intravenous urography was done. Ectopic kidneys may not be functioning, but cases of pelvic kidney-related stone disease or renal sigmoid fistula formation have been reported. Although in this case no such pathology was found. Urothelial carcinoma of the ectopic kidney is a rare disease, and only three cases have been described in the literature.[9] Histology in the ectopic kidney we received revealed normal histology, and was negative for any pathology, apart from being ectopic.

CONCLUSION

We have described an ectopic kidney on the right side presenting with left side abdominal pain. A simple ectopic kidney may sometimes present with complications, like pyelonephritis, calculi etc. If asymptomatic, no treatment is required.

In conclusion, we have described an adolescent with ectopic kidney presenting with recurrent abdominal pain. To our knowledge, adolescent ectopic kidney presenting so late as abdominal pain has never been reported. We emphasize that for patients with vague abdominal pain for a long time, urologic evaluations should be arranged and screening for ectopic pelvic kidney should be routinely screened. Repeated urine analysis is very important follow-up in ectopic kidney. Early detection and recognition of the ectopic kidney can avoid complications, and decrease long-term sequelae.

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