

Unilateral Ectopic Kidney in the Pelvis – A Case Report

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Abnormalities of the kidney and/or urinary tract are common, and are more common in males than females. We present a case of unilateral pelvic kidney on the left side in a 26-year-old man. A pelvic kidney is a rare entity with a low clinical incidence. An ectopic kidney is often associated with an increased incidence of stone formation as a result of stasis caused by the altered geometry of urinary drainage. (*Chang Gung Med J 2011;34(6 Suppl):10-2*)

Key words: pelvic kidney, urinary tract, calculus

Variations in the urogenital system are common. Anomalies may occur in the number, position, shape, size and rotation of kidney(s), calyces, ureter(s) or bladder. Anomalies of the kidneys are mostly asymptomatic and are often found only during physical or radiological investigations in the hospital for urological or other medical complaints. Sometimes these anomalous kidneys present in the true pelvis, iliac fossa, or lumbar or thoracic regions and may be confused as tumours.

Ectopic kidneys are due to developmental anomalies. Kidneys normally start to develop in the pelvis and migrate to their normal anatomical position in the upper abdomen. The ascent of the kidneys precedes the descent of the gonads into the pelvis. Caudal growth in the embryo appears to assist in migration of the kidneys out of the pelvis into their eventual retroperitoneal location in the renal fossa. They attain their adult position by the 9th gestational week. Factors which interfere with development, such as teratogens, genetic factors, the ureteric bud not meeting with the nephrogenic blastema for normal nephrogenesis or metanephric maternal disease, may result in abnormal migration of the kidney resulting in renal ectopia.^(1,2) During ascent, each kidney acquires its blood supply from neighboring ves-

sels, initially from the external and internal iliac vessels and in the 8th week of development, directly from the aorta. Any abnormality in the origin of the renal arteries may prevent cephalic migration resulting in renal ectopia.⁽³⁾ Ectopic kidneys may be pelvic, iliac or abdominal, anywhere along the path of their usual ascent or contralateral, referred to as “crossed”, with a slight predominance on the left side and in males.⁽⁴⁾ If the kidney fails to ascend, it remains in the pelvis and is called an ectopic pelvic kidney, which can be unilateral or bilateral. Bilateral pelvic ectopic kidneys can occur with or without fusion.

An abnormally high ascent of the metanephros will generate a diaphragmatic defect and subsequently an ectopic kidney in the thorax. An intrathoracic ectopic kidney may be congenital or acquired. This condition is rarely bilateral and occurs mostly on the left with a preponderance in males.^(5,6)

CASE REPORT

A 26 year -old man came to the urology clinic at Mamata Hospital complaining of left iliac fossa pain, a burning sensation during micturition and one episode of gross haematuria.

There was no bacterial growth on urine culture

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and serum creatinine levels were within normal limits. An intravenous pyelogram (Fig. 1) and computed tomography (Fig. 2) showed the location and function of the right kidney were normal. The left kidney was not found in its normal anatomical position and a hydronephrotic left kidney (pelvic kidney) was found in front of the sacrum with the renal pelvis situated in front of the sacroiliac joint. There was a

3 x 2.5 cm calculus in the left renal pelvis. The patient was advised to undergo an open pyelolithotomy.

DISCUSSION

An ectopic kidney is classified into an abdominal, lumbar or pelvic kidney based on its location in the posterior abdominal cavity. It is rare in the thoracic cavity.⁽⁷⁾ Factors that may prevent orderly movement of the kidneys include ureteral bud maldevelopment, defective metanephric tissue, genetic abnormalities, maternal illness and teratogenic causes.⁽⁸⁾ Although a simple ectopic kidney is seldom responsible for symptoms, the association with malrotation of the renal pelvis with a calculus increases the risk of hematuria, hydronephrosis, and stone formation with colicky pain, as in the present case.^(8,9)

With growth, the kidneys gradually ascend to the abdomen and away from the midline. Since under-ascent is more common than over-ascent, ectopic kidneys are more commonly found in the pelvis or lower abdomen. Most renal anomalies are incidental findings.⁽¹⁰⁾ The diagnosis of ectopic kidney in the pelvis can be made by ultrasonography.



Fig. 1 Intravenous pyelogram showing a calculus (arrow) in the left renal pelvis.

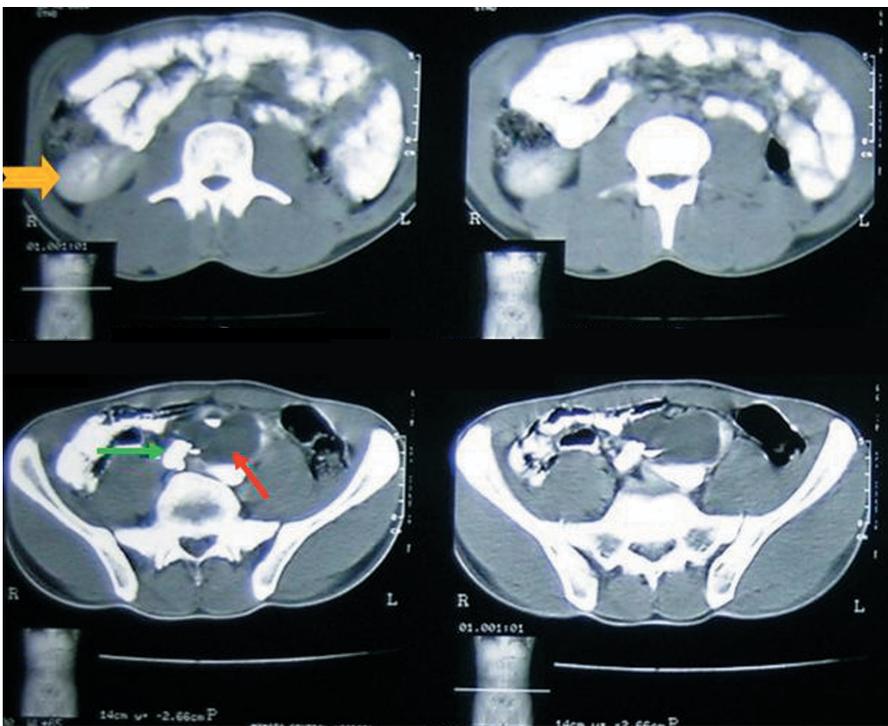


Fig. 2 Computed tomography scan showing the right kidney in the normal location (orange arrow). A hydronephrotic left kidney (red arrow) is seen in front of the sacrum, with a calculus in the left renal pelvis (green arrow).

Pelvic ectopia is seen in an estimated 1 of 2100 to 3000 autopsies. Most ectopic kidneys are clinically asymptomatic and they are not more susceptible to disease than normally positioned kidneys, except for the development of hydronephrosis and urinary calculus formation.⁽¹¹⁾ The abnormal position of ectopic kidneys may result in a pattern of direct and referred pain that is atypical for colic and may be misdiagnosed as acute appendicitis or pelvic organ inflammatory disease in women. Other signs and symptoms of ectopic kidneys include incontinence, a palpable abdominal mass, urinary tract infection, renovascular hypertension secondary to an anomalous blood supply and dystocia from a pelvic kidney.⁽¹²⁾ Ectopic kidney is often associated with other abnormalities such as agenesis of the opposite kidney, vascular malformation and genital anomalies.^(8,9,12)

In the present case there was no right kidney anomaly or genital organ malformation. The left kidney was found in front of the sacrum with a calculus in the renal pelvis. The blood supply of an ectopic kidney can vary. There can be more than one aberrant artery and aberrant arteries can originate from the abdominal aorta, common iliac artery, external iliac artery or inferior mesenteric artery.⁽¹³⁾

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