Left ectopic kidney with non rotation: a case report

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ABSTRACT

Congenital anomalies of the urinary tract system are common. The ectopic pelvic kidney is a rare anomaly about 1:2500 live births, left side being more common. Here we are reporting a case of left ectopic kidney with non rotation and morphologically normal right kidney. The case was found during routine dissection in the department of anatomy in an adult male cadaver. There were no other anomalies observed.

Keywords: Ectopic kidney, non rotation, anterior hilum, pelvic kidney.

According to Robert Gutierrez (1936), 40.0% of pathologic conditions of the urinary system are due to certain ectopic variations. These may be in number, position, shape and size, or in rotation of the kidney(s), the calyces, the ureter(s) or the bladder. Usually these anomalies are associated with defects of the vertebral column, the lower GI tract, the genital tract, the spinal cord or the meninges.[1]

CASE REPORT

A case of unilateral ectopic kidney was found during routine dissection in an adult male cadaver. When the abdomen was opened by classical incisions, a large mass was observed at the level of pelvic brim opposite the sacroiliac joint. The right kidney was found in the lumbar region with normal morphology. When the fat and the covering fascia of the enlarged mass were cleared off, an oval shaped left kidney with its pelvis and major calyces was observed facing anteriorly. Major calyces (4-5) were seen outside the hilum.

The left kidney measured 9.5 cms vertically, 5 cms transversely and 3 cms in thickness. Its dorsal surface was smooth with a sulcus running obliquely and laterally towards the lower pole.

A single renal artery supplying this kidney arose 4.5 cms proximal to the aortic bifurcation. The artery gave three branches; one large branch running in front and entered through the hilum near the pelvis, one small branch entered the substance of the kidney at its upper pole and the last large branch running posteriorly forming a sulcus along with the vein and supplying the region by giving smaller branches.

The left suprarenal gland situated infront of the left crus of diaphragm, opposite the vertebral end of the 11th and the 12th ribs and receiving arterial supply by superior suprarenal artery, arising from the inferior phrenic artery, middle suprarenal artery and inferior suprarenal arteries are arising from the abdominal aorta.

No other aberrant artery was seen. The left renal vein draining the kidney runs posterior to the aorta to open into the inferior vena cava. The upper pole being more pointed than the lower pole. The ventral surface was characteristically marked by a large hilum occupied by dilated pelvis with major calyces and a branch of renal artery (Fig. 1).Cut section reveals normal cortex, medulla, renal pyramids, minor and major calyces, no cyst was observed (Fig. 2). Histopathological studies were done and found to be normal.

DISCUSSION

In congenital anomalies of all the systems, the urinary tract system anomalies accounts for 3.0%, in which the pelvic kidney is a rare anomaly about 1:2500 live births and the left kidney being more commonly affected.[2,3] Incidence of ectopic kidney has a reported frequency of 1:500 to 1:1100; ectopic thoracic kidney 1:13000; one normal and one pelvic kidney 1:3000 and crossed renal ectopic 1: 7000.[4] In this case the kidney was not entirely pelvic. Its upper pole was at the level of L_4.

Belsare (2002) reported a case of ectopic kidney of left side and associated with multiple visceral variations were in the form of mechanical displacement of sigmoid colon and mesocolon to the right side, compensatory hypertrophy of the right kidney, enlarged uterus and displaced ovary and vascular variations included multiple renal vessels on the both the sides, variations in abdominal aorta, inferior venacava and in the gonadal vessels.[5]

In ectopia, the vascularization pattern remains frozen at whatever development stage the ascent ceases.[6] In this

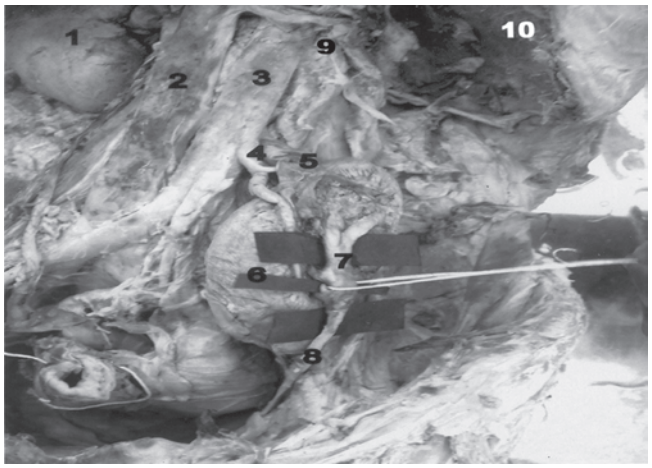

Fig. 1. Photograph of a dissected specimen in situ (left ectopic kidney with non rotation)

1.Right kidney, 2.Inferior vena cava, 3.Abdominal aorta, 4.Left renal artery, 5.Left renal vein, 6.Left kidney, 7.Pelvis with major calyces, 8.Ureter, 9.Left supra renal gland, 10.Spleen

Fig. 2. Coronal section of kidney showing normal cortex, medulla, renal pyramids, minor and major calyces, no cyst was observed

case the left renal artery arose 4.5 cm proximal to aortic bifurcation and the renal vein draining the kidney passes behind the aorta to open into the inferior venacava.

Developmentally the permanent kidney first lies in the pelvic cavity with its hilum directed anteriorly then the kidney gradually ascends with medial rotation and reaches the lumbar region with its hilum directed medially.The ascent of the kidney is caused by diminution of body curvature and by growth of the body in the lumbar and sacral regions. The ectopic position of kidney is due to arrest of its ascent during the development.[7] In present case, the left kidney is observed at the level of sacroiliac joint with its hilum directed anteriorly, due to arrest of its ascent during the development. The commonest cause of the failure of ascent is the presence of sickle-shaped peritoneal fold which projects from the lateral pelvic wall containining the umblical artery.[8]

The functional ectopic kidney may go undetected in life and may be observed only after death, either in autopsy or during dissection. Symptoms due to ectopic kidney may vary from none to pain, hydronephrosis, and pyelonephritis, renosigmoid fistulae or Lithiasis.[5]

Renal ectopia may present diagnostic problems when acute renal disease develops and there is always a danger that an unwary surgeon may be tempted to remove it as an unexplained pelvic mass.[3] In case of females the pelvic kidney may result in obstetric complications.[9] In addition to the routine contrast X-rays i.e. Intravenous pylogram and ascending pyologram, the modern methods of investigations such as Ultra sonography, computer tomography (CT) and magnetic resonance image (MRI) scan etc. are very useful to diagnose the ectopic kidney. Thus, operative complications may be avoided and a good prognosis may be assured.

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