CROSSED FUSED ECTOPIC RIGHT KIDNEY WITH FUSION TO MID/LOWER POLE OF LEFT KIDNEY

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Abstract: Crossed fused renal ectopia is an unusual congenital anomaly in which both the kidneys lie on one sided and are fused. Crossed fused renal ectopia is usually characterized by double pelvis and ureters that drain into both sides of the urinary bladder (1). When an ectopic kidney crosses over to the contra lateral side, the kidney lies below the contra lateral kidney. There is usually fusion between two kidneys and the crossed lower kidney malrotates so the pelves point to the midline and the crossed kidneys drainage is to the side it would drain to if it had not malrotated.

Keywords: Crossed fused renal ectopia, congenital anomaly, Ureter, Kidney

CASE REPORT:
A 35 years old male patient presented with history of pain in left lumbar region for the one month. General physical examination and routine laboratory investigations were normal. Ultrasound revealed absence of kidneys on right side and a large left kidney which possibly represents the unilateral (large) fused kidney on left side with no kidney on right side. Diagnosis of Crossed Renal Ectopia with fusion (inferior ectopia type) was thus established.

INCIDENCE:-
Crossed ectopic kidneys are fused to their ipsilateral mate in more than 90% of cases. Crossed ectopia without fusion is rare (1 in 75000 autopsies) as compared to the fused crossed ectopia with fusion (13). Males have much incidence then females and right sided crossed fused renal ectopia is about 67%. Crossed fused renal ectopia is the second common fusion abnormality of the kidney after horse shoe kidney, with an incidence of approximately 1:1300-1:7500.

EMBRYOLOGY:-
Crossed fused renal ectopia is thought to result from aberrant metanephros development in which the normal displacement of fetal kidneys from the pelvis to the lumbar fossae is altered or inhibited. The embryological basis of crossed renal ectopia has not been clearly established. The formation of kidneys depends of the presence of both the ureteric bud and the metanephric blastema. The ureteric bud arises from the lower portion of the Wulffian duct and the metanephric blastema is a mesoderm tissue. Both these tissues migrate towards each other and merge to form the kidney and the urinary tract. It is suggested that overbending and rotation of the caudal end of the embryo prevents the ureteric bud from merging with the ipsilateral metanephric blastema and it turns toward the more-closer contralateral side. The migrated and the normally placed ureteric bud induces the metanephric blastema twice to from two kidneys on one side. The migrated and the normally placed ureteric bud induces the metanephric blastema twice to form two kidneys on one side. (3), (14) However, this explanation does not hold true in the present case as there embryological basic for crossed fused renal ectopia needs to be re-evaluated.

DISCUSSION:
After horseshoe kidney, crossed fused ectopia of the kidneys is the most frequent fusion abnormality of the urinary tract. In this abnormality, both the kidneys are located on the same side with two separate ureters arising from the respective kidneys. The ureters arising from the crossed over kidneys travels back to the opposite side and inserts in the bladder. The arterial supply and venous drainage may be atypical and therefore challenging for the nephrologists, radiologists, and surgeons. Six variations of crossed fusion have been described. These are, type 1-inferior crossed fused ectopia, Type 2-sigmoid or S-shaped kidney, type 3-uni lateral lump kidney, type 4 unilaterial disc kidney, type 5-L-shaped kidney and type 6-superior crossed fused ectopia. (2) Most cases of renal ectopia asymptomatic during life and are diagnosed incidentally. (15) When symptoms do occur, the most common symptoms reports are abdominal or flank, pain, a palpable mass, hematuria and dysuria. Nephrolithiasis, uretero-pelvic junction obstruction and hydronephrosis are associated with this anomaly. (1), (15), (16), (5), (6), (7). The most frequent anomalies associated with crossed ectopia are imperforate anus (4%), skeletal abnormalities (4%) and septal cardiovascular defects, (1). Associations of crossed ectopia with obstruction urolithiasis, infection, hypospadia, cryptorchidism, urethral valves, multi cystic dysplasia have also been observed. Most of presenting symptoms of crossed renal ectopia are non specific and most cases remain asymptomatic through their life and are diagnosed incidentally (17), (18), (19)
Renal ultrasonography is a good radiological modality to demonstrate the presence of fused ectopia. The sonographic examination usually reveals absence of kidney in contralateral renal fossa or pelvis and fused kidneys on the
ipsilateral side (with an anterior or posterior notch and different orientations of collecting systems). (8) IVP reveals the absence of kidney on the contralateral side and also gives the information regarding the origin, course and insertion of the ureters. However, IVP may not definitely confirm the fusion of kidneys. Computed tomography (CT) allows accurate diagnosis, provides good orientation about the anatomy of the kidneys and help in deciding the surgical approach. Renal scintigraphy can also give information about functioning of the kidneys. (1), (9) Renal cell carcinoma, transitional cell carcinoma and Wilm’s tumor have been reported in crossed fused renal ectopia which were managed by resection of the involved renal unit. (10), (11), (12) Renal angiography or CT lower angiography is essential in these cases to provide key information about renal vasculature, which is essential for planning the surgical dissection and time line of separation between the kidneys. (10)

Fig-1 shows, CECT Coronal images showing crossed fused ectopic kidneys on left side.

Fig-2 shows, CECT delayed images showing right and left ureter arising from ectopic fused kidneys with and inserting normally into the bladder.

Fig-3, 4 & 5 Shows, the right and left renel artery supplying to crossed fused ectopic kidneys.

Fig-6 shows, the CECT delayed images, showing separate left and right renal pelvis.
CONCLUSION:
Crossed fused renal ectopia is usually detected during investigations for other problems. It is found more commonly in males. This condition is a rare congenital malformation, and is reported to be asymptomatic but may have varied presentations and congenital anomalies. The most frequent anomalies with crossed ectopia are imperforate anus (4%), skeletal abnormalities (4%), and septal cardiovascular defects (15). Associations of crossed ectopia with obstruction urolithiasis, infection, hypospadia and cryptorchidism. However this case study has no such related anomaly.

REFERENCES