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UNILATERAL ACCESSORY RIGHT KIDNEY WITH DOUBLE URETERS – A CASE REPORT AND ITS CLINICAL SIGNIFICANCE

Anatomy

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KEYWORDS

INTRODUCTION

Kidneys and ureters are situated retro-peritoneal in the posterior abdominal wall. They lie in the extraperitoneal connective tissue immediately lateral to the vertebral column. In the supine position, the kidneys extend from approximately T12 superiorly to vertebra L3 inferiorly.[1] A single large renal artery, a lateral branch of the abdominal aorta, supplies each kidney. These vessels usually arise just inferior to the origin of the superior mesenteric artery between vertebrae LI and L2There are number of genes involved in the development of kidney in mammalians; molecular interaction between **pax/eya/six** genes are playing their role in its development. Excretory part develops from Metanephric blastema. Collecting system of the metanephric kidney is from ureteric bud from mesonephric duct close to its entrance to the cloaca. The ureters develop from the ureteric bud, a diverticulum from the mesonephric duct. The ureteric bud elongates to form the ureter, its initial part undergoes repeated branching to form the major and minor calyces[2] Mammalian kidney development study has helped in understanding the basic concepts of its embryonic development, and also in the direction of revealing the cause of number of renal diseases and its treatment. The present rare case was met during routine dissection for I MBBS students.

Case report

During the routine dissection of the abdomen in a female cadaver we have come across an ectopic accessory kidney. It was found that the right kidney was placed in the lower level of anterior abdominal wall which was placed ventrally. It had double ureters they terminated into urinary bladder with separate orifices. This kidney was supplied by branches of right common iliac artery. In this accessory and ectopically placed kidney ureters are originated from the upper and lower renal poles. (Fig 1), The size of kidney was 10cm x5 cm and thickness of 4cm Revealed. The kidneys in the lumbar position were rudimentary with dimensions 4cmx3cms and were supplied by right and left renal arteries. Histologically revealed rudimentary tubules in kidneys placed in lumbar region and well developed and functional glomerulus in accessory kidney(Fig 2& 3)

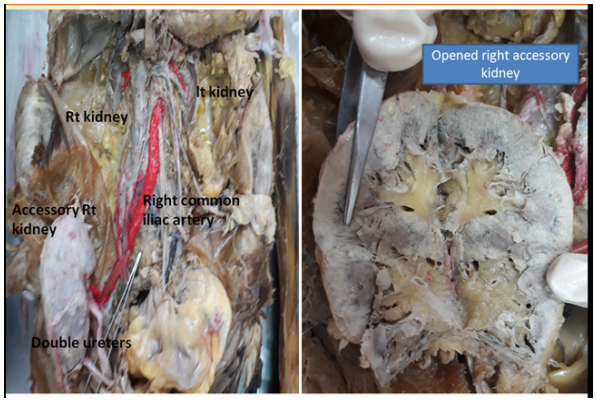

Fig 1 Showing rudimentary right and left kidneys in situ and right accessory kidney with double ureters

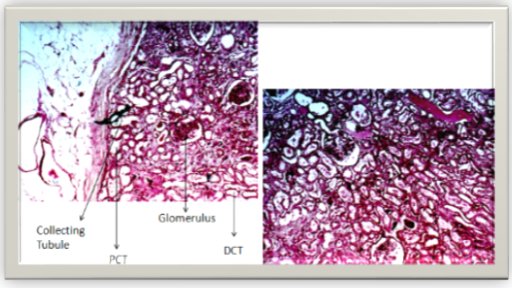

Fig 2 Showing microscopic structure of right accessory kidney

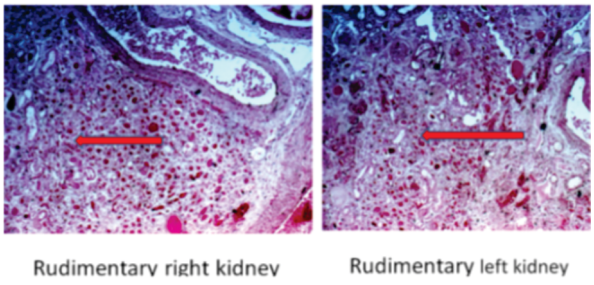

Fig 3 Showing microscopic structure of rudimentary right and left kidneys

DISCUSSION

Rare renal anomalous presentations are having utmost clinical importance. The Knowledge about anatomical presentation of accessory kidney or ectopic kidney with bifid ureters is having great importance of radiological and surgical standpoint. Evaluation methods like cystoscopy and retrograde pyelography are specially performed radiological procedures to rule out structural defects. The knowledge of anatomical variations serves as basic guidance for proper therapeutic and surgical interventions to avoid complications.

Rahabu Marwa reported a case of a male cadaver, of 40 years of age, observed double bilateral ureters connected both the kidneys.In this case, the ureters originated from the upper and lower poles, whereby, those from upper poles of the kidneys were longer than those from lower poles. These both sides duplicated ureters opened separately into the urinary bladder[4] **Mittal MK** and others reported congenital anomalies of kidney and ureter and they found a case of caudal ectopic kidney which was abdominal in position located above the iliac crest but below L2 vertebra[5]. In a study done by **Dhar** has revealed incidence of accessory renal arteries in 20% of specimens in which 15% in both sides and 55% in one side .[6]

Rahul GA reported unilateral incomplete bifid ureter presenting with calculus in right kidney with hydronephrosis by radiological study. Intravenous pyelography show eddilated right kidney and normal left kidney.[7]

There is dearth of kidney donors, it is facing the challenge of successful matching between the donors and recipients. Kidney transplantation is an ultimate option for the patients of end stage renal disease; where the successfully transplanted kidney works as his own in the recipient. Probably the accidental clinical finding of accessory kidney in an individual is having an advantage to donate for transplantation in a matched recipient.[8] Often for the transplant kidney can be taken from the deceased donor with an extensive precautionary testing measure. Aberrant position of kidney predisposes to additional vascular supply.

Number of such additional arteries can vary from very few to many in number. The incidence of aberrant renal arteries is found in 33% of cases.[9]In the context of renal transplantation, it is important to consider such additional arteries in both the individuals. It is important to minimise the additional risk of surgical procedureswith aberrant renal arteries.[10]

CONCLUSION

Accessory kidney with double ureters which are not draining well to the bladder because of kinking or obstruction leads to hydrouretrosis, hydronephrosis and renal failure. Having well-functioning accessory kidneys with ureters is having an advantage, but in case of surgical management of renal diseases it becomes utmost important to handle the situation. An individual with additional kidneys may be a better donor to meet the demand from the other end. Hence a sound knowledge of the anatomical details and familiarity with rare anomalies is essential for correct diagnosis and appropriate surgical management of such congenital malformations.

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