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Unilateral Renal Agenesis.

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ABSTRACT

Unilateral renal agenesis (URA) is the most common congenital abnormality of the urinary tract which is characterized by the absence of one kidney. Incidence is between 1/500 to1/3200 live births .Males are more commonly affected. We received a fetus which was aborted spontaneously, from the Dept of OG. On dissecting the abdominal cavity, we noticed empty renal fossa on the right side with left normal kidney and no other anomalies were noted. This case was studied from the embryological perspective.

Keywords: URA, Metanephric mesenchyme, IUGR, ureteric bud.

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INTRODUCTION

Unilateral renal agenesis (URA) is the most common congenital abnormality of the urinary tract and is characterized by the complete absence of development of one kidney [1, 2] . Incidence is between 1/500 to1/3200 live births [3]. Males are more commonly affected than females with a ratio of 1.2-2.3:1 [2]. Approximately 56% of URA occurs on the left side [4]. The prognosis with isolated URA is good, as patients can have a normal life expectancy compared to bilateral renal agenesis which is fatal.

Case Report

We received a fetus aborted spontaneously, from Department of OG, Sree balaji medical college and hospital with parent consent. The anomalies were studied from an embryological perspective. The fetus was dissected after getting proper research and ethical clearance from the university.

As received from the hospital 25 yr old female (PRIMI) in wedlock with a non-consanguineous spouse since 11 months. She was not diabetic, hypertensive, not alcoholic and not used any oral contraceptive pills or drugs during pregnancy. No h/o any fever, irradiation, genetic disorder known in the family.

MATERIALS AND METHODS

The fetus was fixed in 10% formalin for 10 days and the same was injected through anterior fontanelle for fixing the brain. After fixation, the fetus was dissected under magnifying lens and the light source. Crown-rump length (CRL) was measured using inch-tape.

Observation

External Features

Low set ears and no other external anomalies noted.

On Dissection noticed,

- Empty renal fossa (absence of kidney and ureter) on the right side (fig 1)
- Left normal kidney and ureter (fig 2)
- No other anomalies were noted.

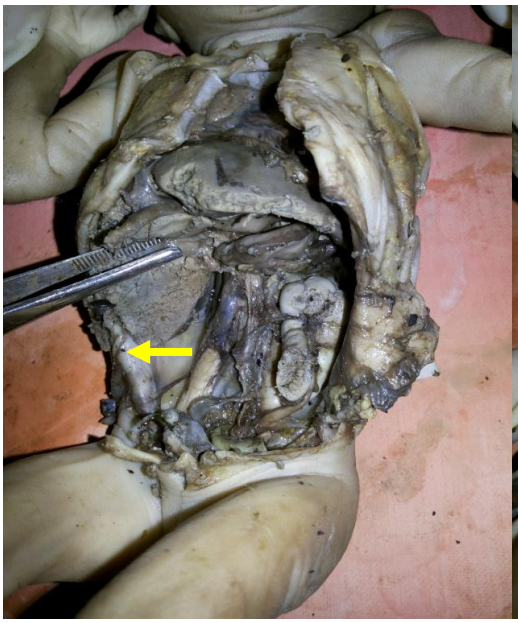

Figure 1

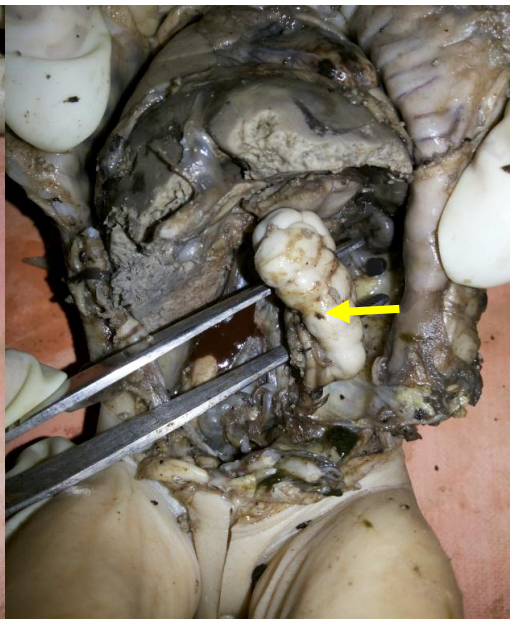

Figure 2

DISCUSSION

Renal agenesis results from the development failure of the metanephric blastema (undifferentiated mesenchyme in nephrogenic ridge) and the ureteric bud [7].

- Metanephric blastema: Proximal component, which give rise to glomeruli and tubules upto the distal collecting tubules.
- Ureteric bud: distal component, which give rise to collecting ducts, calyces, and pelvis.

During the 5th week of gestation the ureteric bud arises from the wolffian duct and penetrates the metanephric blastema to induce the renal development. Nephrogenesis begins under the influence of the ureteric bud. Fetal kidney is the important source of amniotic fluid, hence URA and BRA are associated with oligohydramnios and anhydramnios. According to some authors, URA was more common on the left side [4, 5], but in this case agenesis was found on the right side.

CONCLUSION

URA is often associated with IUGR, premature birth, multiple gestation, maternal diabetes and ingestion of teratogens like thalidomide, cocaine, retinoids [2]. The incidence of URA is increased in newborns with a single umbilical artery [6]. URA can be caused by mutations in many genes such as RET (10q11.2), BMP4 (14q22-q23), FRAS1(4q21.21), PAX2(10q24.31), HNF1B(17q12) [8]. It can also occur as a part of multiorgan syndromes such as Kallmann syndrome, Branchio-oto-renal syndrome, Di George syndrome, Fraser syndrome, MURCS syndrome, Poland syndrome [9]. The prognosis of individuals with URA depends on the presence and the severity of associated anomalies and the status of the remaining kidney [10].

Though appropriate measures and management against risk factors decreased the incidence of such anomalies, it does not completely eliminate the possiblity of having the disease. This neccesiates further study into the multifactorial etiologies attributed to it and preventive measures to be taken.

REFERENCES

[1] Parikh CR, McCall D, Engelman C, Schrier RW. Am J Kidney Dis 2002; 39(4): 689-94.
[2] Robson WM, Leung AC, Rogers RC. Adv Pediatr 1995; 42: 575-591.
[3] Rajesh Yalavarthy, Chirag R Parikh. 2003;14(3):336-341.
[4] Dr. Michiel Schreuder, Orphanet - unilateral renal agenesis, 2014.
[5] Amin J Barakat. Case Rep Clin Pract Rev 2002; 3(2): 57-60.
[6] Elder JS. Urologic disorders in infants and children. In: Behrman (ed). Nelson's Textbook of Pediatrics. 16th edition, Philadelphia. Suanders, 2000, 1619-1621.
[7] Atala A. Congenital anomalies of the kidney. In:Schrier RW (ed). Diseases of the kidney and urinary tract, 7th edition. Philadelphia Lippincott William and Wilkins, 2001, 649-662.
[8] Simone Sanna- Cherchi Caridi, and Gian Marco Ghiggeri. Pediatr Nephrol 2007;22(10): 1675-1684.
[9] Glassock RJ, Massry SG. Other congenital disorders. In: Glassock and Massry (ed) Diseases of the Kidney and Urinary tract 4th edition, Philadelphia. Lippincott Williams and Wilkins, 865-868.
[10] Argueso LR, Ritchley ML, Boyle ET, et al. Pediatr Nephrol 1992; 6: 412-6