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Toxicological SciencesJournal homepage: <http://www.ijfmts.com/>

Case Report

Crossed fused renal ectopia- A rare autopsy based finding

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ARTICLE INFO

Article history:

Received 02-03-2021

Accepted 18-03-2021

Available online 28-04-2021

Keywords:

Cross fused renal ectopia

Autopsy kidney findings

Ectopic kidney

and Young male

ABSTRACT

Crossed fused kidney place in an unusual area are the congenital developmental malformation of urinary tract. There are many variants of ectopic renal presentation. In this malformation both the kidneys are anatomically located at one side of the body over each other and inferior CFRE is the most frequent type observed. The condition is generally asymptomatic and diagnosed as an incidental radiology finding and Multi Detector Computed Tomography (MDCT), urography is the investigation of choice. Autopsy based kidney specimens with gross anomalies can be rich source of knowledge about renal pathology.

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1. Introduction

During early period of development, the kidney lies close together in the sacral region of the embryo. However, as the abdomen enlarges the kidneys are drawn apart as two separate organs and ascend to their final position in their lumbar region between 6 to 9 weeks of gestation. Failure of the kidneys to ascend can result in different kinds of malformation.¹ Crossed fused renal ectopia is one of the developmental anomalies of kidney during intrauterine life. Anatomically, in this malformation both the kidneys are located generally at one side of the body over each other. The condition is generally asymptomatic and diagnosed as an incidental radiological finding. Here, we present a case where CFRE was detected in an autopsy of a young male. CFRE has a reported autopsy incidence of around 1:2000 and is the second most frequently observed fusion anomaly of the kidney following horseshoe kidney.²

2. Case Report

On 2nd of September 2019, an 18year old male of average body built was brought to casualty of AIIMS Bhubaneswar with a history of abdominal pain but with no evident history of suffering from any illness except the past history of anxiety and palpitation with high blood pressure irregularly. On enquiry, his friend had informed about the consumption of unknown substance while they were celebrating and dancing on the occasion of Ganesh puja. He was immediately taken to local hospital after he started having moderate abdominal pain with nausea following where he was referred to higher centre. Upon arriving, despite of conservative management in a line of suspected poisoning case by unknown substance, he declared as dead within few hours of admission at casualty of AIIMS, Bhubaneswar. However, the cause of death was unknown because of which, medico-legal autopsy was performed. While exploring the abdominal cavity after giving incision during autopsy, the right renal fossa was found to be empty with a crossed right renal ectopia fused to the left kidney along with both the ureters going down from the same sides to bladder. The upper pole of ectopic kidney is fused to lower pole of normally positioned kidney which was

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showing an irregular contour without suprarenal capsule. There was no renal calculi observed and no dilatation of collecting system was seen. But, history of hypertension prior to death was present which was not diagnosed clinically. Patient was taking homeopathic treatment for high blood pressure as informed by his relatives. Other visceral organs were congested and no significant finding was observed.

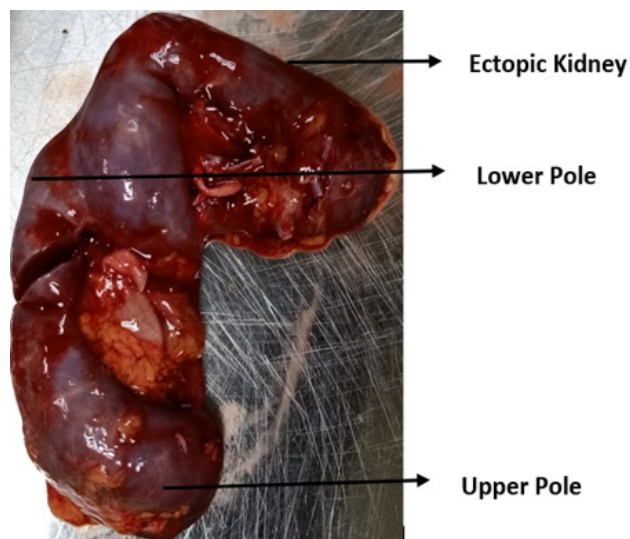


Fig. 1: Left kidney along with right ectopic kidney

3. Discussion

Renal fusion anomalies can be categorized into 2 varieties: a) Horseshoe kidney and its variants and b) Crossed fused renal ectopia (CFRE). Among the two varieties CFRE is a rare renal anomaly with incidence of 1:1300 – 1:7500. In most cases, it is usually the left side kidney which crosses to the right which is opposite to our case where right kidney has crossed to the left side. The ectopic kidneys have a high incidence of stone formation with increased susceptibility to develop complications like urinary infections, urolithiasis, and abdominal mass.³ Crossed renal ectopia is classified into 4 main categories: Crossed renal ectopia with or without fusion, unilateral crossed renal ectopia (with unilateral renal agenesis), and bilateral crossed renal ectopia (without fusion). In 85–90% of the crossed renal ectopia cases, the kidneys are partially or completely fused, hence given the name CFRE and is reported to be two times more prevalent in young male than women which is similar in our case i.e. 18 years male. With respect to CFRE, six anatomical variations has been described namely, inferior CFRE, sigmoid kidney, lump kidney, disc kidney, L-shaped kidney, and superior CFRE. While the inferior CFRE is the most frequent type observed where the upper pole of the inferiorly situated crossed ectopic kidney is fused to the lower pole of

the superiorly, normally positioned kidney similar to our findings. Hypertension is very rare in CFRE and there is no given single patho-physiologic mechanism for this entity in the literature.² There are various investigations like CECT, Magnetic Resonance Imaging (MRI) or Intravenous Pyelography (IVP) and renal scintigraphy for diagnosis of these anomalies but Multi Detector Computed Tomography (MDCT); urography is the investigation of choice for these types of anomalies.⁴

4. Conclusion

Crossed fused renal ectopia, though a rare phenomenon, its existence should not be ignored. While it was an accidental finding during autopsy in our case and it was unrelated to circumstances leading to death. Probability of subtle signs and symptoms may be present during life. However it is imperative to present this rare finding to the growing statistics of ectopic kidney and related research. Since it is a developmental anomaly, where normal anatomical parts are compromised, symptoms are bound to occur, which whatsoever remains undetected. The primary emphasis during autopsy examination is identification of the immediate cause of death leading to examination of the organs frequently involved i.e. heart, lungs, stomach and brain.⁵ Autopsy kidney specimens with gross morphological anomalies can be a potential source of knowledge about renal pathology and should be emphasized. To conclude, ectopic kidney is an accidental finding, but awareness regarding this issue and its probable signs and symptoms among general population is the need of hour.

5. Conflicts of Interest

All contributing authors declare no conflicts of interest.

6. Source of Funding

None.

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Cite this article: Jahan A, Chandra V. Crossed fused renal ectopia- A rare autopsy based finding. *IP Int J Forensic Med Toxicol Sci* 2021;6(1):28-30.