

The Various Associated Urological Abnormalities in Children with Renal Ectopia: A 10 Yrs Experience

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Abstract:

Aims: To study the various urological abnormalities in children with renal ectopia.

Materials and methods: Retrospective review of patients of renal ectopia between 2008 to 2017.

Results: 36 patients of renal ectopia (RE): 20 boys and 16 girls, with a mean age of 13 months (range at birth-8.5 yrs) underwent clinical and radiological evaluation. 28 patients were asymptomatic. 4 pts had crossed and 3 bilateral renal ectopia. The most common associated urological abnormality was vesicoureteric reflux (VUR), present in 25% cases of crossed renal ectopia (CRE), 40% cases of simple renal ectopia (SRE) which increased to 70% in bilateral ectopia. Orthotopic kidney was involved in 80% cases in unilateral ectopia. Other documented abnormalities were: renal dysplasia in orthotopic kidney in 40%, hypospadias in 2% and undescended testes in 2% cases.

Conclusions: Prevalence of associated urological abnormalities in renal ectopia is high, VUR being the most common. Early management of VUR in an already reduced renal function (found in 90% of pts) in ectopic kidney is of paramount importance in salvaging the kidney.

Keywords: renal ectopia, urological abnormalities, vesicoureteric reflux

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I. Introduction

Most cases of renal ectopia (RE) are asymptomatic and therefore usually an autopsy finding. (1,2) Symptomatic patients usually present with urinary tract infection (UTI), abdominal pain and fever. Other presentations are palpable abdominal mass, hematuria, incontinence, renal insufficiency and hypertension. (3)

A high incidence of associated urological abnormalities has been reported with VUR in ~70% and hydronephrosis in 33-50% of symptomatic patients with renal ectopia in a large series. (1,4,5)

II. Materials And Methods :

Retrospective review of records of all patients with renal ectopia diagnosed between Jan 2008-December 2017 was done to look for the different associated urological abnormalities and their prevalence. Evaluation was done by noting down the clinical symptoms and ultrasound examination. The variables noted down were: age, sex, laterality, clinical symptoms, radiological investigations (pre- and post natal USG, renal isotope scan, VCUG) and associated anomalies if any.

USG was done to detect renal ectopia and associated anomalies, VCUG to detect VUR and renal isotope scan to quantify renal function and detect dysplasia if any.

III. Results:

RE was found in 36 patients: 20 boys and 16 girls. Mean age at diagnosis was 13 months (range newborn to 8.5 yrs). Simple renal ectopia (SRE) was found in 32 pts: 17 on the left side, 12 on the right side and 3 bilateral. 4 pts had crossed renal ectopia (CRE): 3 on the left side and 1 on the right side.

28 pts were asymptomatic with only 8 presenting with some symptoms.

All the pts had undergone prenatal and postnatal USG for diagnosis and evaluation. Abnormal prenatal USG findings were documented in 28 pts of which 46% were suspected to be having renal agenesis. 28 patients had abnormal postnatal USG of which 78% patients were found to have been accurately diagnosed as cases of renal ectopia.

Associated urological abnormalities were found in ~43% cases of RE of which VUR was the most frequently encountered. Grade 2 or higher grade was present in ~30% pts with CRE and 40% pts with SRE, its incidence rising up to 70% in bilateral SRE. The orthotopic kidney was affected in 80% pts with SRE. No difference in the incidence of VUR was found in pts with right and left SRE or between males and females. In

90% pts with unilateral RE , the renal isotope scan showed decreased renal function with the mean differential renal function of 35.5%.

In pts with SRE, among other urological abnormalities detected were dysplasia in orthotopic kidney(multicystic dysplastic kidney) in 8% , undescended testis and hypospadias in 4% pts.

IV. Discussion:

The main focus of the study of a population of children with renal ectopia was on the incidence of associated urological abnormalities. 80% were asymptomatic and detected by screening USG. Kramer and Kelalis, reporting on the association between RE and VUR , found a 52% incidence of VUR in nearly half of their patients with CRE and 70% incidence of VUR in half of pts with SRE. In our study, the figures differ as the incidence of VUR, though significant, was lower than what has previously been reported and also differs according to the type of RE. Bilateral SRE had a higher incidence of VUR (70%) than unilateral SRE(25%). Interestingly in our study, reflux affected the normal kidney in 80% cases. DMSA scan documented decreased split renal function in 90% cases. (5)

A high incidence of hydronephrosis has been reported in children with RE. Kramer and Kelalis have reported a 33% incidence of hydronephrosis while Gleason et al reported an incidence of 52% of UPJ obstruction. In our patient population with RE , only one pt required pyeloplasty for a documented UPJ obstruction of the ectopic kidney and 11 had some degree of renal pelvic dilatation. (1,5)

Spinal anomalies have been suggested to be a causative factor of RE. The tract between the sacrum and second lumbar vertebra has been described as the “renal route”. (6) Maizels and Stephens induced trunk deformities in chick embryo to obtain renal ectopia. None of our pts, however, revealed any spinal abnormalities. (7)

A high incidence of associated genital abnormalities have been reported in RE. (1) In our study 4% had male anomalies like hypospadias and undescended testis while female anomalies reported were: agenesis of uterus & vagina and unicornuate uterus. (8,9) As the mean age of our patients was only 13 months, so longer follow up till adulthood is required to reveal the true spectrum and sequelae of genital abnormalities as gynaecological problems (pelvic pain, infertility and recurrent abortion) present at a later age. So, the parents were counselled regarding the presentation, possible risks and sequelae of the various gynaecological abnormalities especially in females.

V. Conclusion

A large proportion of children with renal ectopia have associated urological abnormalities of which VUR was the most common. The presence of VUR in the orthotopic kidney along with decreased renal function in the ectopic kidney may lead to renal functional impairment if not detected early and treated promptly.

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