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Single System Ectopic Ureter Inserted Into Vaginal Vestibule in 10 Month Female Infant: A Case Report

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ABSTRACT

In paediatrics patients, congenital anomalies of the ureter are responsible for a significant cause of morbidity. Judicial application of radiological investigations like ultrasonography, intravenous urography, micturating cystourethrogram, computed tomography, MR urography and nuclear imaging play an important role in management. Cystotourethrovaginoscopy is used to localise the site of ectopic insertion and evaluation of bladder. Antenatal diagnosis and early treatment of ectopic ureter can give better chances of renal salvage. We report a rare case of unilateral single system ectopic right ureter inserting into the vaginal vestibule in female infant with the severely compromised cortical function of the right kidney.

Key words: single system ectopic ureter, vaginal vestibule

INTRODUCTION

Generally, paediatric patients with ectopic ureter especially females present with urinary incontinence. [1] There are several controversies regarding ectopic ureter in paediatric patients. These controversies are related to embryological development, anatomical types and functioning of the affected kidney. Western literature says ectopic ureter is common in female and 80% of them are often associated with duplex kidney and poorly functioning of the kidney. [2] An ectopic ureter is defined as an ectopic ureteric orifice outside the posterolateral extremity of the bladder trigone. [3] The ectopic insertion of distal ureter results from abnormal migration of ureteral bud. [4] In females, the ureter may be ectopically inserted into the lower bladder, urethra, vestibule, vagina and rarely into the uterus. While in males, it may be inserted into the lower bladder, posterior urethra, seminal vesicle, vas deference, ejaculatory duct and rarely into rectum. [5,6] In females, the distal ectopic ureter can terminate distal to the continence mechanisms of the bladder neck and external sphincter and thus may be associated with incontinence when compared to males. [7]

CASE PRESENTATION

A 10-month-old female infant, born by LSCS delivery at 39 weeks of gestation with a birth weight of 2.8 kg, presented with foul-smelling low urine leakage and dysuria. However, urinary stream was maintained. She had 2 episodes of urinary tract infection in the past 2 months. Postnatally she was asymptomatic for 8 months. Complete blood count, biochemical tests, and urinalysis were normal.

An abdominal ultrasound examination revealed, dilated pelvi-calyceal system of the right kidney with pelvis measuring 14 mm in anteroposterior diameter and cortical thickness of 4- 5mm (Fig 1). The right ureter was dilated and tortuous. Right vesicoureteric junction (VUJ) was not seen, right ureter was seen to

course posterior and caudal to bladder (Fig 2). Transperineal USG revealed opening of bladder into the vaginal wall (Fig 3). Urinary bladder and left ureter were normal On intravenous urography there was no opacification of right kidney and ureter (Fig 4).

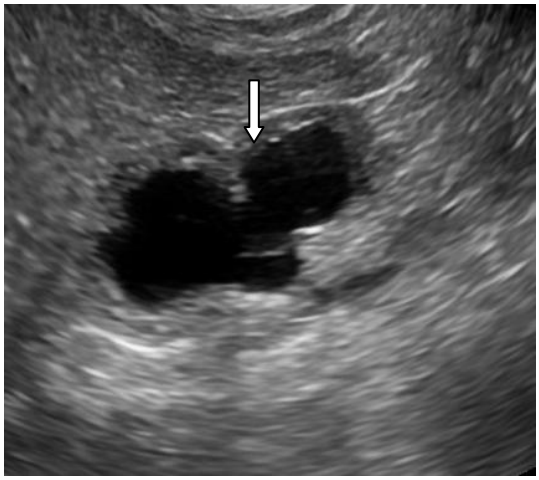

Fig 1. USG image with arrowhead showing severe hydronephosis of right kidney

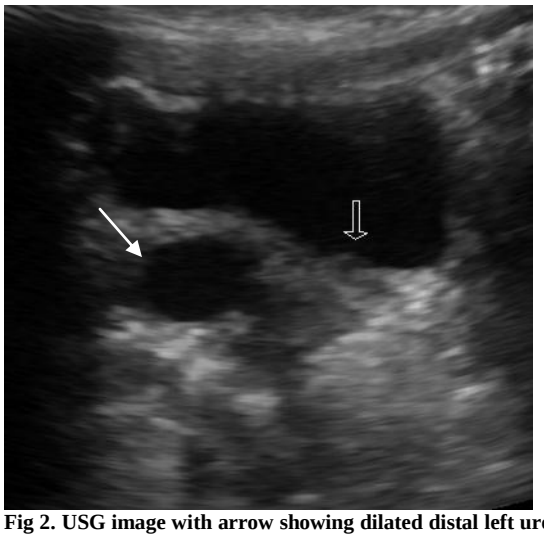

Fig 2. USG image with arrow showing dilated distal left ureter with no VUJ on right side, arrowhead showing normal VUJ on left side

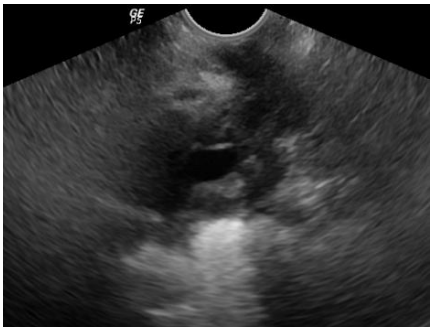

Fig 3. Transperineal USG showing dilated ureter opening into vaginal wall

Physical examination and Cystourethrovaginoscopy was done under general anaesthesia and it confirmed the findings (Fig 5). Left ureteric opening was in normal orthotropic position. Renal dynamic scan revealed severely compromised cortical function of the right kidney.

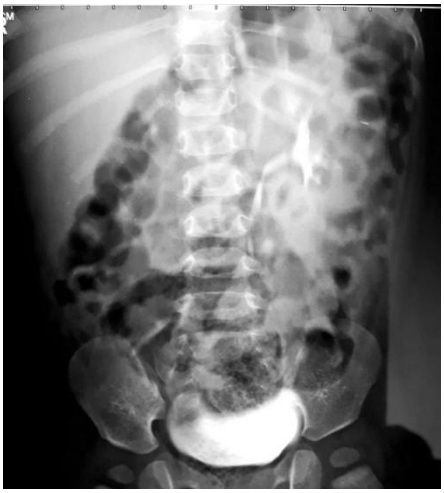

Fig 4. IVU image showing no excretion of contrast on right side

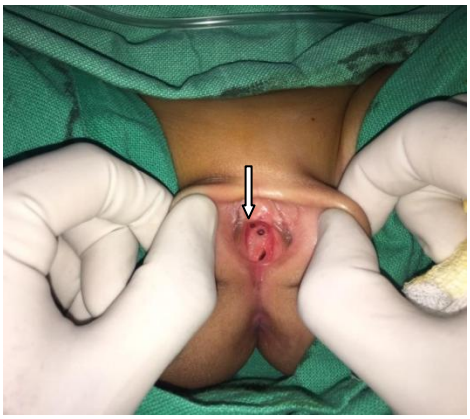

Fig 5. Photograph with arrowhead showing opening of right ectopic ureter

DISCUSSION

An ectopically inserted single system ectopic ureter into the vaginal vestibule with severely compromised renal function represents a rare congenital anomaly of the genitor-urinary system. Ureteral development begins in the 4th weeks of intrauterine life, the ureteric bud arises as an outpouching from the mesonephric duct and interacts with the metanephric blastema. The mesonephric

duct distal to the ureteric bud becomes a common excretory duct and it will absorb into the developing bladder to become a part of the trigone. [8] Point of origin of ureteric bud is the future ureteric orifice. If the origin of ureteric bud from the mesonephric duct is more cranial than usual, the ureter is incorporated into the bladder wall at a lower level than normal or open at an ectopic site inferior to the bladder wall. [9] There are two deferent forms of the ectopic ureter, one draining duplex collecting system and another draining to a single collecting system of the kidney. The ectopic ureter which is draining to a single collecting system of kidney is known as single system ectopic ureter. The single system ectopic ureter appears to be more common in India. [10] Although, most cases (80%) of the ectopic ureter is associated with duplex collecting system. [2] Most common site of ectopic insertion of the ureter in females is bladder neck and upper urethra (33%), vaginal vestibule between urethra and vaginal opening (33%), vagina (25%), and very rarely into the cervix and uterus (5%). [1] The single system ectopic ureter is more common in males while double collecting system is more commonly associated with females. [11] Surgical treatment should be based on the anatomy and renal function. Nephroureterectomy and ureteral reimplantation are the options for the treatment. Ureteral reimplantation is preferred when renal function is 10% or more [12] and Nephroureterectomy is preferred when relative renal function is less than 10%. [13] In our case, there is severely compromised the renal cortical function of an ipsilateral kidney with single system ectopic ureter inserting into the vaginal vestibule. However, contralateral kidney and ureter are normal. Nephroureterectomy of affected kidney and ureter was advised.

CONCLUSION

Female infant presenting with continuous dribbling of urine should be investigated. Ultrasound is the modality of choice for initial investigation and addition of transperineal sonography to routine transabdominal ultrasound can demonstrate etiology in more convincing manner.

Conflict of interest: None to declare.

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