Case Report

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A Case of Single System Ectopic Ureter and Dysplastic Kidney and Contralateral Refluxing Duplex Kidney

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Nasrin Esfandiar,[1]*
Leili Mohajerzadeh,[2]
Mostafa Sharifian,[1]
Reza Dalirani,[1]
Jamshid Jabarpour[1]

1 Pediatric Nephrology Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
2 Pediatric Surgery Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

***Corresponding Author**
Nasrin Esfandiar MD
Mofid Children's Hospital. Tehran-Iran
Email: nasrinesfandiar@gmail.com

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We report a six-year-old female child who presented with continued incontinence and a normal physical examination. Urodynamic study was normal and uroflowmetry showed a prolonged low peak flow rate (PFR) in voiding. VCUG revealed left grade ш VUR. Her symptom continued in spite of medical treatment. Finally, MRU showed a single system ectopic ureter with a dysplastic kidney on the right side and a refluxing duplex kidney on the contralateral side. She underwent surgical correction and recovered.

Keywords: Ectopic Ureter; Ureter Abnormalities; Magnetic Resonance Imaging; Urography; child; Renal Dysplasia.

Running Title: A Case of Single System Ectopic Ureter and Dysplastic Kidney

Introduction

Ectopic ureters (EU) are more common in duplex systems than single systems [1] but it may be reverse among Asians [2]. Diagnosing a single system ectopic ureter (SSEU) requires high clinical suspicion, especially when a dysplastic kidney and continuous incontinence exist simultaneously [3-5]. Magnetic resonance urography (MRU) is increasingly considered as a useful diagnostic tool to detect pediatric urinary tract anomalies [6-12]. Here we report a case of SSEU diagnosed by MRU and cystoscopy with an ipsilateral dysplastic kidney and a contralateral refluxing duplex kidney.

Case Report

A six-year-old girl presented with incontinence in spite of a normal physical examination of the lumbosacral area.

Primary evaluation including urinalysis, urine culture, electrolytes and renal function tests was normal. She had no history of urinary tract infection. Ultrasonography (US) showed an invisible right kidney and a larger-than-normal left kidney (96*35mm) without other abnormalities, which was interpreted as compensatory hypertrophy. On voiding cystourethrography (VCUG), the bladder was distensible and had a regular wall. There was grade 3 vesicoureteral reflux on the left side and a mild residue after voiding (Fig.1). Dimercaptosuccinic acid scan revealed a non-functioning right kidney and a mildly enlarged and normal cortical functioning left kidney (Fig.2). Cystometry showed normal bladder compliance without any uninhibited bladder contractions. Uroflowmetry exhibited a prolonged low peak flow rate (PFR).

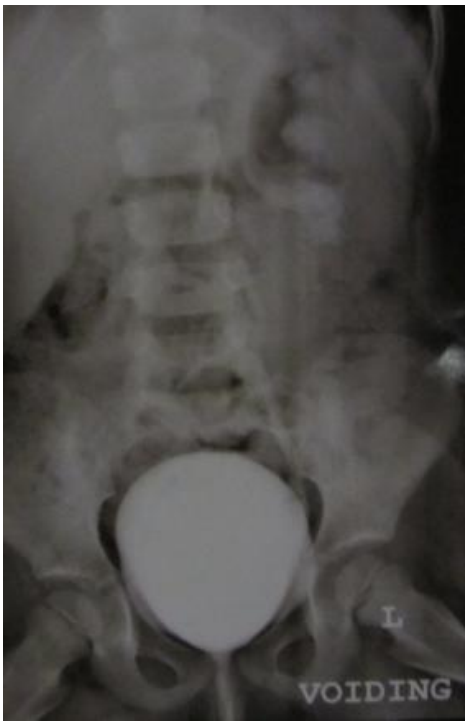


Figure 1. VCUG revealing grade three left vesicoureteral reflux

Therapy with prophylactic antibiotic and baclofen was started. Nevertheless, the patient continued to experience little incontinence. Magnetic resonance urography (MRU) showed a kidney-like atrophic tissue on the right side without a functional cortex with a visible ectopic ureter and a larger-than-normal left kidney with complete duplication and a rather dilated ureter (Fig.3 & 4).

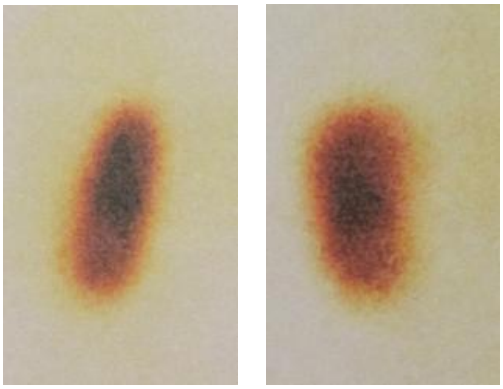
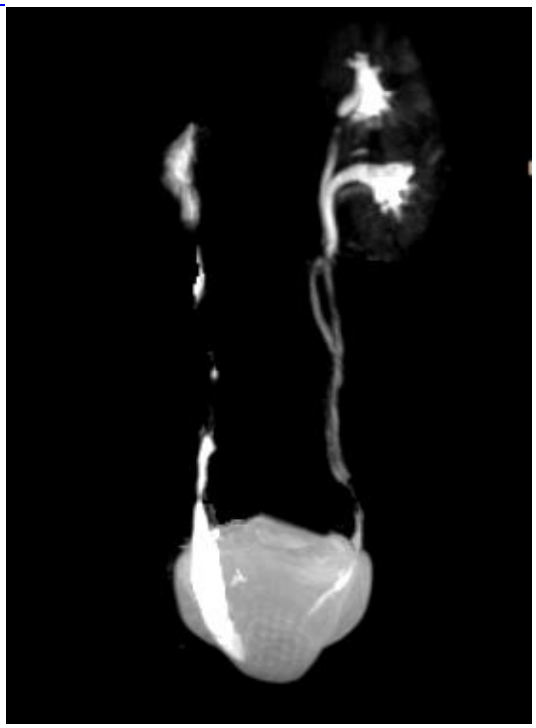


Figure 2. Renal DMSA scan showing non- functioning right kidney



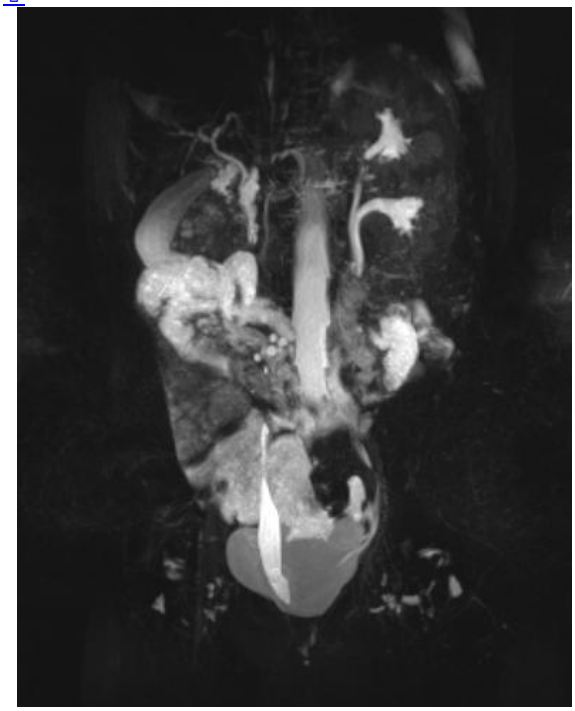


Figure 3 & 4. MRU showing right single system ectopic ureter with dysplastic kidney and left partial duplicated system

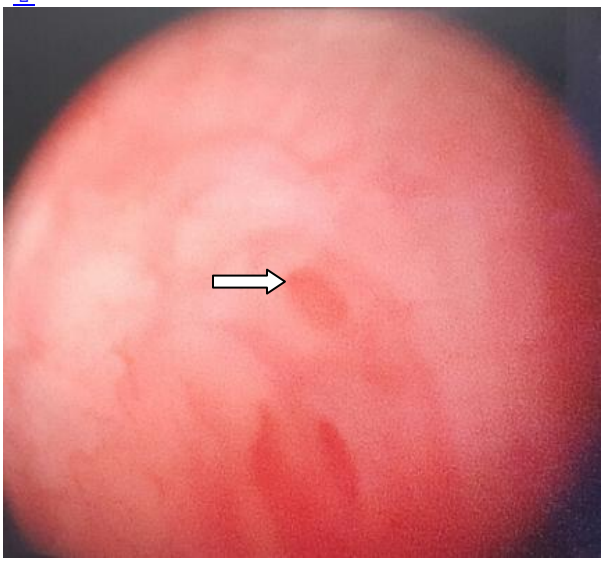


Figure 5. Cystoscopy revealed a right side ectopic ureter distal to the bladder neck in the vestibule around the urethral opening

She underwent cystoscopy which revealed a right side ectopic ureter distal to the bladder neck in the vestibule around the urethral opening (Fig.5). The left ureter orifice was single and in normal position. She underwent open surgery. The right side ureter was divided extravesically and the distal ureteral stump was ligated. The proximal stump had a little urine flow so it underwent Lick-Gregoir ureteral reimplantation. On the left side, two ureters joined just outside the bladder. Both duplicated ureters were reimplanted extravesically and two double J catheters were inserted in both of them.

Discussion

In this case report, EU was related to a dysplastic single system not a duplex system. Wakhlu [13], Gotoh [14] and Roy Choudhury [2] reported that EU was more prevalent as a SSEU in females among Asians. Embryologically, the ureteric bud originates more cranially and its abnormality results in renal dysplasia [3]. Different surgical operations could be performed, especially with regards to the amount of renal function [15-21]. Although the affected kidney had 8% function in our case, she underwent Lick-Gregoir ureteral reimplantation due to the sufficient amount of urine although surgeons increasingly prefer the laparoscopic approach. Contrary to our female case and some Asian reports [2, 13-14, 22], the majority (75%) of SSEUs are reported in male patients. EU is a diagnostic challenge, especially when SSEU with non-functional kidney exists. Considering the fact that T2 weighted MRU does not require contrast injection especially in dysplastic kidneys, it could be a valuable diagnostic modality in detecting ureteral abnormalities. Thambidorai et al [6] reported a 6-year-old female with urinary incontinence and duplex kidneys in whom EU was not detected by other modalities while MRU showed a dilated and ectopic ureter related to the upper moiety of the left kidney. Therefore, MRU could be the preferred modality in EU and duplex renal anomalies.

Conflict of Interest

None declared

Financial Support

None declared

References

1. Chowdhary SK, Lander A, Parashar K, Corkery JJ. Single-system ectopic ureter: a 15-year review. Pediatr Surg Int. Nov 2001;17(8):638-641.
2. Roy Choudhury S, Chadha R, Bagga D, Puri A, Debnath PR. Spectrum of ectopic ureters in children. Pediatr Surg Int. Jul 2008;24(7):819-823.
3. Yan YJ, Feng ZX, Min ZH, Jin YX. Single-system ectopic ureters associated with renal dysplasia. Pediatr Surg Int. Dec 2004;20(11-12):851-854.
4. Li J, Hu T, Wang M, Jiang X, Chen S, Huang L. Single ureteral ectopia with congenital renal dysplasia. J Urol. Aug 2003;170(2 Pt 1):558-559.
5. Borer JG, Bauer SB, Peters CA, Diamond DA, Decter RM, Shapiro E. A single-system ectopic ureter draining an ectopic dysplastic kidney: delayed diagnosis in the young female with continuous urinary incontinence. Br J Urol. Mar 1998;81(3):474-478.
6. Thambidorai CR, Anuar Z. Magnetic resonance urography in duplex kidney with ectopic ureteral insertion. J Indian Assoc Pediatr Surg. Jul 2011;16(3):115-117.
7. Joshi M, Parelkar S, Shah H, Sanghvi B, Agrawal A, Mishra P. Role of magnetic resonance urography in the diagnosis of single-system ureteral ectopia with congenital renal dysplasia: a tertiary care center experience in India. J Pediatr Surg. Oct 2009;44(10):1984-1987.
8. Joshi M, Parelkar S, Shah H. Renal dysplasia with single system ectopic ureter: Diagnosis using magnetic resonance urography and management with laparoscopic nephroureterectomy in pediatric age. Indian J Urol. Oct-Dec 2009;25(4):470-473.

9. Jain KA. Ectopic vaginal insertion of an obstructed duplicated ureter in an adult female: demonstration by magnetic resonance imaging. Clin Imaging. Jan-Feb 2007;31(1):54-56.
10. Krishnan A, Baskin LS. Identification of ectopic ureter in incontinent girl using magnetic resonance imaging. Urology. May 2005;65(5):1002.
11. Riccabona M. Pediatric MRU--its potential and its role in the diagnostic work-up of upper urinary tract dilatation in infants and children. World J Urol. Jun 2004;22(2):79-87.
12. Gylys-Morin VM, Minevich E, Tackett LD, Reichard E, Wacksman J, Sheldon CA. Magnetic resonance imaging of the dysplastic renal moiety and ectopic ureter. J Urol. Dec 2000;164(6):2034-2039.
13. Wakhlu A, Dalela D, Tandon R, Chandra H, Wakhlu AK. The single ectopic ureter. Br J Urol. 1998;82:246–251.
14. Gotoh T, Morita H, Tokunaka S, Konayagi T, Ichiro T. Single ectopic ureter. J Urol. 1983;129:271–274.
15. Prakash J, Singh BP, Sankhwar S, Goel A. Normal functioning single system ectopic ureter draining into a Gartner's cyst: laparoscopic management. BMJ Case Rep. 2013; doi:10.1136/bcr-2013-009563
16. Nishimura K, Hisamatsu E, Kuwabara H, Nakagawa Y, Sugita Y. Male infant with a single-system ectopic ureter that required the removal of the ureteral stump after nephrectomy. Int J Urol. Jun 2013;20(6):640-642.
17. Kumar S, Bera MK, Bera KP, Vijay MK, Kundu AK. Laparoscopic ureteric reimplantation of a single-system ectopic ureter in a girl: A rarity. J Minim Access Surg. Jul 2010;6(3):80-82.
18. Park YH, Kang MY, Jeong MS, Choi H, Kim HH. Laparoendoscopic single-site nephrectomy using a homemade single-port device for single-system ectopic ureter in a child: initial case report. J Endourol. May 2009;23(5):833-835.
19. Jeong BC, Lim DJ, Lee SC, Choi H, Kim HH. Laparoscopic nephrectomy for a single-system ectopic ureter draining a small, dysplastic and poorly functioning kidney in children. *Int J Urol.* Feb 2007;14(2):104-107.
20. Basiri A, Mohammad Ali Beigi F, Abdi H, Mahmoudnejad N. Laparoscopic reimplantation for single-system ectopic ureter. Urol J. Summer 2007;4(3):174-176.
21. Kijvikai K, Ratana-Olarn K, Chalermsanyakorn P, Nitjaphanich S. Laparoscopic management of a single system ectopic ureterocele with transitional cell carcinoma in the distal ureter. Int J Urol 2006;13(5):625-627.
22. Gangopadhyaya AN, Upadhayay VD, Pandey A, Gupta DK, Gopal S. Single system ectopic ureter in females: A single center study. Journal of the Indian Association for Pediatric Surgery 2007;12(4):202-205.