

## CASE REPORT

# Abnormal Insertion of Right Ureter Into the Left Ureter Associated with Absence of Normal Right Ureterovesical Junction

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**Aim:** There are lots of factors which cause the dilatation of one or both ureters. Congenital absence of ureterovesical junction was reported as very rare cause of megaureter. Early detection of congenital absence of normal ureterovesical junction offers utilities for reconstruction and prevents the complications such as megaureter and vesicoureteral reflux.

**Material and methods:** A male patient 16 months old was referred for renal DTPA scintigraphy confirmed previously with diagnosis as megaureter of left kidney associated with consecutive stasis grades III of the left ureter. Dynamic renal scintigraphy was performed after intravenously injection of 37 MBq Tc DTPA. Scintigraphy was carried out on a Dual Head-Siemens gamma camera using a high resolution collimator. During the dynamic scintigraphy patient was positioned in supine position. **Results:** Male patient 16 month old with vomiting, diarrhoea, fever, indolence during last two weeks were referred for dynamic renal scintigraphy. Meanwhile patient was also performed other laboratory tests such as: RBC=  $4.07 \times 10^{12}$ , SRE= 47, Hb=111, Bun=5.2, Creatinine=29 and urine proteins ++. Examinations with Ultrasound, CXR and intravenously urography confirmed diagnosis of left megaureter associated with consecutive stasis Gr.III and Stasis of left kidney gr. I-II. With dynamic scintigraphy was confirmed the absence of right ureterovesical junction followed by joining of right and left ureter at the level of the lower part of the left ureter. **Conclusion:** Renal dynamic scintigraphy demonstrates abnormal insertion of right ureter into the left ureter associated with absence of normal right ureterovesical junction, right megaureter and with vesicoureteral reflux. **KEY WORDS:** URETEROVESICAL JUNCTION, MEGAURETER, REFLUX.

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## 1. INTRODUCTION

According the referred data, in children, megaureter is considered any ureter greater than 7 mm in diameter. This

definition was based on the measurements in fetuses greater than 30 weeks gestation and children younger than 12 years (1). Normally ureters are the two

funnel-shaped tubes that carry urine from the kidneys to the bladder. As complication of uretery malformations such as primary obstructed ureter, non-obstructive, non-refluxing megaureters, obstructed, refluxing megaureters and secondary megaureters include reverse flow of urine into the kidneys and pooling of urine inside the ureter that does not drain. The pooling can cause a child to develop a urinary tract infection. In some children, complications from megaureter can cause kidney damage and failure. The most usually symptoms that result from urinary infection are back pain, fever and vomiting.

## 2. CASE REPORT

Sixteen months old male patients with indolence, fever, vomiting and diarrhea, two weeks treated with antibiotics, antipyretics and anti vomiting medicaments were object of our study. Blood tests except Sedimentation rate of red blood cells were normal: SRE= 47, RBC= $4.07 \times 10^{12}$ , Hb=111, Bun=5.2, creatinine 29. In urine analyses were detected proteins. By radiologic examinations were confirmed some hidroaeric transparencies suspected for ileus in the level of right hemi abdomen, whereas with intravenously urography were presented changes which were suspected for left Megaureter associated with urinary retention in left

ureter gr. III and left kidney. Renal dynamic TcDTPA scintigraphy were done with intention to examination the renal function. The data about renal function acquired with renal TcDTPA scintigraphy are presented in Table 1.

Kidney	Left	Right
Renal split function	57.3%	42.7%
Cortical counts	12156	9047
Renal retention	41.2	30.1
Time of maximum	3.33 sec	6.33 sec
Time of 1/2	19.9 sec	14.9sec

**TABLE 1.** The data about renal function

As were shown in Table 1 the participation of left kidney in total kidney function was higher 57.3%, whereas the participation of right kidney was 42.7%. In contrary with these results the renal retention was higher in right kidney associated with extremely prolonged half time of urinary elimination (presented in radiorenogram (Figure 1).

In sequential images were noticed the dilatation of right ureter in their upper part but at the end of the study except dilatation of left ureter were presented the insertion of right ureter in the lower part of left ureter with absence of right ureterovesical junction (Figure 2).

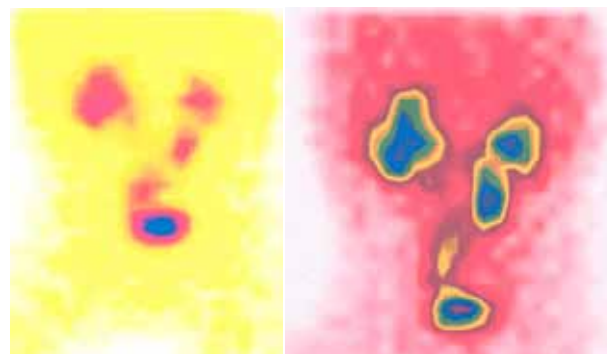
The final spot images (Figure 3) acquired at the end of the study had presented the absence of right ureterovesical junction associated with abnormal insertion of final part of left ureter in lower part of right ureter. This congenital malformation were resulted with abnormally renal urinary flow and as consequence were right dilatation of right ureter and prolonged elimination time of urine in left kidney.

### 3. DISCUSSION

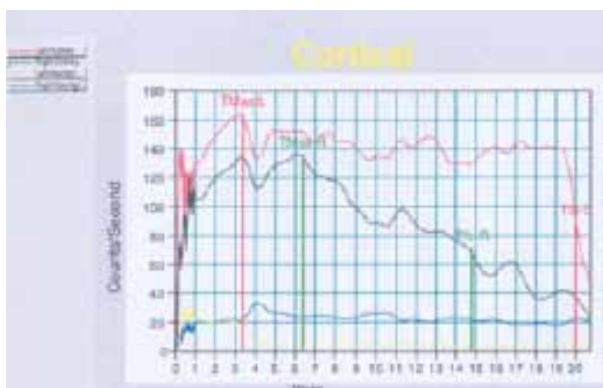
The majority of megaureters were found during the evaluation of

a child with a urinary tract infection. These patients usually experience fever, back pain and vomiting. Dilatation of the urinary tract may imply a blockage or obstruction, but that is not always the case. One unusually congenital anomaly such we presented is very rare in literature and was too difficult to find similar case reported data. According the reported data megaureter as complication in children is rare complication Congenital anatomical or functional obstructions of the mid-ureter are exceedingly rare. There have been only 18 previously cases of well-documented ureteral valves in pediatric literature(1). The most reported data about anatomical and functional anomalies of ureters refer anomalies that are in relation with

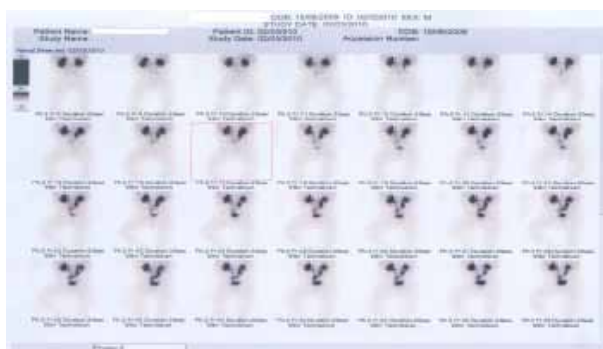
ureteral valves or non obstructive ureteral fetal folds. Advanced ultrasound examination enables the early detection of these malformation in the fetus at the during pregnancy time. Intravenous urography, fluorographic vesico cystouragrophy and ultrasound are usually methods of choice, but ra-



**FIGURE 3.** In these static renal images were detected the absence of normal insertion of right ureter in right ureterovesical junction. Right ureter follows their way and was inserted in the lower part of left ureter and as common ureter were inserted in left ureterovesical junction. As complication the proximal part of right ureter and common ureter were enlarged (dilated)



**FIGURE 1.** Kidney radiorenography. The left radiorenal curve shows prolonged  $\frac{1}{2}$  times.



**FIGURE 2.** Sequential PA images during the renal TcDTPA scintigraphy. In scintigraphy were presented both kidneys. In upper part of left ureter initially were presented dilatation of ureter, but at last sequences were presented dilatation in the middle part and absence of right ureterovesical junction.

dionuclide renal scintigraphy and direct radionuclide cystography are a well-accepted alternative to fluoroscopic VCUG for screening asymptomatic siblings or offspring, for follow-up examination of children with vesicoureteral reflux (VUR), for postoperative evaluation after ureteral reimplantation, and for excluding VUR when it is not seriously considered. The advantages of radionuclide methods include continuous monitoring and imaging, high sensitivity, and a decreased radiation dose for a voiding imaging study. The dose to the pelvic organs was significantly lower when the study was popularized in the screen film cassette spot film era of former fluoroscopic equipment.

Finally, radionuclide scintigraphy in our case presentation enable as to detect one congenital ureteral anomalies which weren't detected with other methods such was ultrasound, conventional radiography and intravenous urography.

### REFERENCES

1. Berrocal T, López-Pereira P, Arjonilla A, Gutiérrez J. Anomalies of the Distal Ureter, Bladder, and Urethra in Children:

- Embryologic, Radiologic and Pathologic Features. September 2002 RadioGraphics, 22, 1139-1164.
2. Sarin YK, Sinha A, Ojha S. Congenital midureteral obstructions. *Indian J Surg.* 2006; 68: 160-2.
  3. Mering JM, Steel JF, Gittes RF. Congenital ureteral valves. *J Urol.* 1972; 107: 737-9.
  4. Jayanthi VR, Churchill MB, Thorner PS, McLorie GA, Khoury AE. Bilateral Congenital midureteral adynamic segments. *Urology.* 1995; 45: 520-3.
  5. Allen T. Congenital ureteral strictures. *J Urol.* 1970; 104: 196-204.
  6. Ruano-Gil D, Coca-Payeras A, Tejedo-Mateu A. Obstruction and normal recanalization of the ureter in the human embryo. Its relation to congenital ureteral obstruction. *Eur Urol.* 1975; 1: 287-93.
  7. Bernstein J, Gilbert BE. Congenital malformations of the kidney. In: Tisher CC, Brenner BM (editors): *Renal pathology and especially if the diagnosis is in question, with clinical and functional correlations.* JB Lippincott: percutaneous antegrade pyelography or retrograde Philadelphia, 1989.
  8. Lester W, Thomson A, Hodgson NB. Attitudes Toward Megaureter. *Journal of the national medical association*, January, 1974: 58-60.
  9. Carroll D, Chandran H, Joshi A, McCarthy LSL, Parashar K. Endoscopic placement of double-J ureteric stents in children as a treatment for primary obstructive megaureter. *Urol Ann.* 2010 Sep-Dec; 2(3): 114-118.
  10. Mandel GA, Snyder HM, Heyman S, Keller M, Kaplan JM, Norman ME. Association of congenital megacalycosis and ipsilateral segmental megaureter. *Pediatric radiology.* 2005; 17(1): 28-33.
  11. Kajbafzadeh AM, Farrokhi-Khajeh-Pasha J, Reza Ostovaneh M, Ghazi Nezami B. Teapot Ureterocystoplasty and Ureteral Mitrofanoff Channel for Bilateral Megaureters: Technical Points and Surgical Results of Neurogenic Bladder. *The Journal of Urology.* 2010; 183(3): 1168-1176.
  12. Ransley PG, Risdon RA. Reflux and renal scarring. *Br J Radiol.* 1978; (Suppl.): 5: 14.
  13. Ransley PG: Vesicoureteric reflux: Continuing surgical dilemma. *Urology.* 1978; 12: 246.
  14. Hanna MK. Early correction of massive refluxing megaureter in babies, by total ureteral reconstruction and reimplantation. *Urology.* 1981; 18: 562.
  15. Weiss RM, Lytton B. Vesicoureteral reflux and distal ureteral obstruction. *J Urol.* 111: 245, 1974.
  16. Whitaker RH. Methods of assessing obstruction in dilated ureters. *Br J Urol.* 1973; 45: 15.
  17. Hanna MK, Jeffs RD, Sturgess JM, et al. Ureteral structure and ultrastructure, part III. The dilated ureter (megaureter). *J Urol.* 1977; 117: 24.
  18. Williams DI. Personal Communication, 1971.
  19. Williams DI, Whitaker RH, Barratt TM, et al. Urethral valves. *Br J Urol.* 1973; 45: 200.
  20. Williams DI. Urethral valves. A Hundred Cases with Hydronephrosis. In Bergsman D, Duckett JW (eds). *Urinary System Malformation in Children.* The National Foundation-March of Dimes. New York: Alan R Liss, 1977: 55.
  21. Johnston JH, Kulatilake AE. The sequelae of posterior urethral valves. *Br J Urol.* 1971; 43: 743.
  22. Krueger RP, Hardy BE, Churchill BM: Growth in boys with posterior urethral valves. *Urol Clin North Am.* 1980; 7: 265.
  23. Hoover DL, Duckett JW Jr. Posterior urethral valves, unilateral reflux and renal dysplasia: A syndrome. *J Urol.* 1982; 138: 994.
  24. Woodard JR. The prune belly syndrome. *Urol Clin North Am.* 1978; 5: 73.
  25. Duckett JW Jr. The Prune Belly Syndrome. In Kelalis PP, King LIZ, Belman AB (eds): *Clinical Pediatric Urology.* Philadelphia: WB Saunders Company, 1976: 615.
  26. Woodard JR, Parrott TS. Reconstruction of the urinary tract in prune belly uropathy. *J Urol.* 1978; 119: 824.
  27. Jeffs RD, Comisarow RH, Hanna MK. The early assessment for individual treatment in prune belly syndrome. *Birth Defects.* 1977; 13: 97.
  28. Perlmutter AD. Reduction cystoplasty in prune belly syndrome. *J Urol.* 1976; 116: 456.