

## Vesicoureteral Reflux with Bladder Neck Obstruction in a Male Infant

Chung-Cheng Wang, M.D.<sup>1,3</sup>, Jen-Jih Chen, M.D.<sup>1</sup>, Chung-Hsin Peng, M.D.<sup>1</sup>, Chien-Hsun Huang, M.D.<sup>1</sup>, Wen-Terng Lin, M.D.<sup>2</sup>

Department of Urology<sup>1</sup> and Department of Pediatrics<sup>2</sup>, En Chu Kong Hospital and College of Medicine, National Taiwan University, Taipei, Taiwan; Department of Biomedical Engineering<sup>3</sup>, Chung Yuan Christian University, Taoyuan, Taiwan; E-mail: wtl.grace@msa.hinet.net

### BRIEF HISTORY

A 3-month male baby was referred to our pediatric outpatient clinic with spiking fever (40.2°C) for two days. His appetite and activity had decreased over the last two days. On review, his birth history was unremarkable. He was admitted to our hospital for further management.

### CLINICAL INVESTIGATION

He was physically normal except for phimosis. The blood white count was 18800/ $\mu$ L. Urinalysis revealed pyuria (white cell count 6-8 per high power field) and a urine culture showed *Enterococcus*  $>10^5$ . Renal sonography showed bilateral mild hydronephrosis.

### VOIDING CYSTOURETHROGRAPHY

A voiding cystourethrography (VCUG) showed grade five vesicoureteral reflux on left side together with grade four vesicoureteral reflux on right side and relative stenosis of bladder neck compared with bladder base and prostatic urethra (Fig. 1). A fluoroscopy series

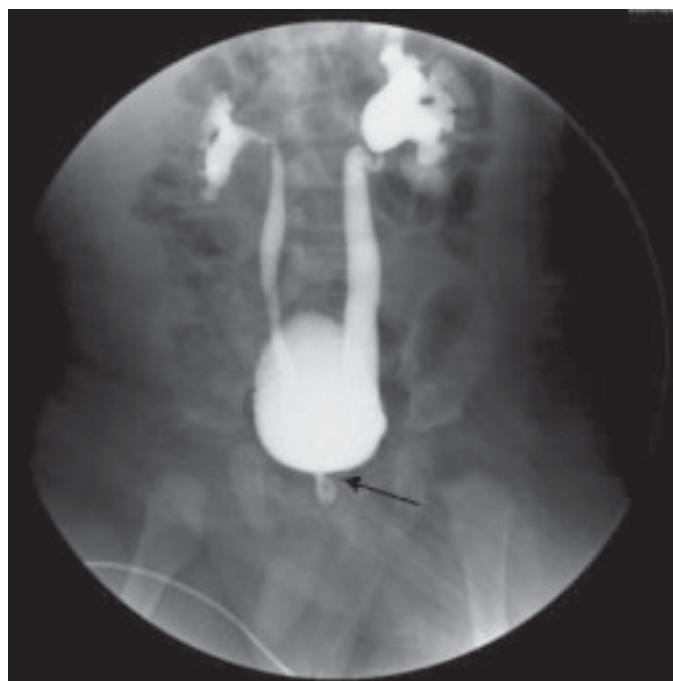
showed persistent narrowing of the bladder neck during micturition (Fig. 2). No distal urethral stricture was found.

### CLINICAL COURSE AND FOLLOW-UP

After hospitalization, this infant was febrile after three days of first-line parenteral antibiotics. His further treatment consisted of low-dose antibiotic (Amoxicillin) and an alpha-adrenergic blocker (Terazosin 0.28 mg/day, the appropriate dose of Terazosin for an infant is approximate 0.04~0.2 mg/kg/day) for 3 months. At this point the antibiotic was discontinued and he was treated with alpha blockers only. His growth and development were within the normal range and no outbreak of urinary tract infection was noted during the follow-up period. We will arrange another VCUG for this patient at age of 9 months.

### COMMENT

Primary vesicoureteral reflux is characterized by the incompetence of the ueterovesical junction due to the shortened length of the submucosal ureter and a change in the muscular support beneath the ureter.



**Fig. 1.** Voiding cystourethrography revealed left Grade 5 vesicoureteral reflux, right grade 4 vesicoureteral reflux and narrow point in the bladder neck.



**Fig. 2.** Voiding cystourethrography revealed persistent bladder neck stenosis without other urethral stricture.

However, more recent observations have led to the theory that bladder dysfunction, with its concomitant elevated intravesical pressure, may play a significant role in the genesis of reflux. Posterior urethral valve, ureteroceles, bladder diverticulum, neurogenic bladder, non-neurogenic neurogenic bladder (Hinman syndrome) or dysfunctional voiding are common conditions associated with secondary reflux. Herein, we highlight the importance of bladder neck obstruction, a rare condition in infants, when making a differential diagnosis of reflux.

The classical diagnostic criteria for bladder neck obstruction are based on a videourodynamic study; which the symptoms include high voiding detrusor pressure, low uroflow, narrowing at the vesical neck with silence of the sphincter on electromyography [1,2]. In 2002, Nitti et al described bladder neck obstruction as forming three categories, namely classical high pressure low flow, normal pressure low flow with narrowing at the bladder neck and delayed opening of the bladder neck [3]. These diagnostic criteria are usually applied in young men with lower urinary tract dysfunction. However, there is no consensus on how high voiding pressure will be sufficient to diagnose bladder neck obstruction in an infant after pressure-flow study. In a study of the natural history and etiology of high voiding pressure in male infants, Ichino et al have showed that maximum voiding detrusor pressure has

a significant negative correlation with age and bladder capacity [4], which implies that detrusor pressure changes with age during the bladder development. Thus it is difficult to have a clear cut-off point in terms of voiding pressure that can be used to define bladder outlet obstruction in infants. Taken together, we may presume that image findings are the most reliable diagnostic evidence in this regard up to the present.

## REFERENCES

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報名日期： 月 日

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 日 期： 97年8月9～10日(週六、日)  
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 台中市南區建國北路一段110號(文心院區)  
 報名費： 伍仟元整

### 學員報名資料

中文姓名： 英文姓名： (請務必填寫)  
 會員編號：  
 出生年月日：西元 年 月 日  
 身份證字號：  
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