CONGENITAL BLADDER DIVERTICULUM IN ASSOCIATION WITH BLADDER OUTLET OBSTRUCTION OR URINARY TRACT INFECTION: REPORT OF TWO CASES

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SUMMARY *: Congenital bladder diverticula (CBD) are unusual but not rare in childhood. The symptoms vary, of which acute urinary retention is a rarity. In this paper the authors report two cases of CBD, one with urinary retention- the 16th case in the literature- and the other with urinary tract infection (UTI). Diagnostic studies and operative approach for this entity are discussed briefly in the report.*

Key Words: *Congenital Bladder Diverticula, Infection, Urinary Retention, Outlet Obstruction, Children.*

INTRODUCTION

CBD (congenital bladder diverticula) without outlet obstruction or neuropathic bladder are unusual in children, however are becoming recognized more often. What is rare, however is its being a cause of urinary retention. CBD are reported to arise almost exclusively in boys (1). We describe two cases of CBD, one associated with acute urinary retention and one with UTI and with bilateral vesicoureteral reflux (VUR).

CASE REPORTS

Case 1:

A 5 year-old boy was admitted with anuria for the last 48 hours. He had had voiding difficulty for the last 6 months. Physical examination was normal except for globe vesicale, decompression of which via an urethral catheter yielded 1700 ml of urine. Ultrasonography (USG) and consequent fluoroscopic voiding cystourethrogram (VCUG) revealed bilateral huge diverticula, one located right laterally and one posteroinferiorly, extending to the bladder neck and compressing it (Fig. 1). Renogram with Tc99m MAG3 showed well preserved kidneys with normal excretory responses. Operation consisted of resecting the diverticula located in juxtaposition to the ureteral orifices and involving them, working intra- and extravesically, closing the defects of the detrussor and bilateral ureteroneocystostomy. The patient has been asymptomatic and well for 14 months.

Case 2:

A 3 year-old boy was admitted with high fever and abdominal pain with severe UTI. He had no symptoms suggesting UTI previously. Further studies with USG and fluoroscopic VCUG revealed bilateral bladder diverticula and bilateral grade 3 VUR. Static scintigraphy with DMSA showed right renal upper and lower pole scarring and normal left kidney. Tc 99m MAG3 renogram revealed a 30 % differential function of

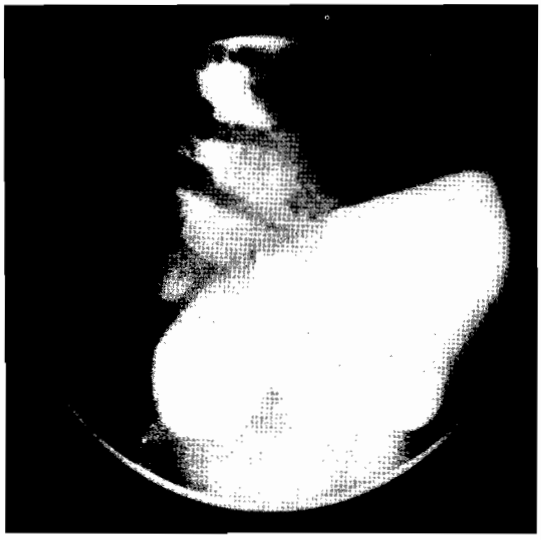

Fig. 1 : VCUG in case 1 revealing postreoinferiorly extended huge diverticulum, displacing the bladder anteriorly and impinging on the bladder outlet.

the right kidney with bilateral normal excretory responses. At operation, bladder diverticula were excised with extravesical dissection and bilateral ureteroneocystostomy was performed extravesically. The diverticula were located in juxtaposition to the ureteral orificies and involved them. The patient is well after a 3-months follow up.

Pathological examination in both cases revealed the diverticula to be composed of mucosa and a few muscle fibers.

DISCUSSION

CBD is defined as a mucosal outpocketing through an inherent weakness in the detrussor muscle (2). It is suggested to be differentiated from paraureteric saccule (Hutch) occurring through the muscular hiatus and from the ones associated with Ehler-Danlos syndrome where recurrence is a rule (3). CBD is considered to arise near and above the ureteral orifice (3,4). It can cause VUR by distorting ureterovesical junction or as a consequence of incorporating the orifice as it enlarges gradually (1,5,6). This was the case in our second patient, resulting in serious renal damage.

The symptoms of CBD may vary greatly, from asymptomatic cases to the most common presentation of UTI and very rarely to bladder outlet obstruction (3,7). The infection is considered to be due to stasis of urine in the diverticula, which could also result in stone formation and hematuria (5, 8). Bladder outlet obstruction is encountered in cases where the diverticulum enlarges downward and displaces the bladder upward, occluding the urethra or bladder neck as it fills (8). In a report of 6 cases of CBD, 2 with outlet obstruction, Pieretti added three more to Sheldon's 10 cases found in the literature, making case 1 in this report the 16th in the literature, as we were not able to find further related reports (3, 8). A history of difficulty in micturition lasting for 6 months before the urinary retention in this patient reveals the progressive nature of the entity considered as a self-perpetuating cycle by Sheldon and Essig, as urine is diverted to the diverticulum due to impediment of the outlet, worsening the obstruction (8).

VCUG under fluoroscopic control is emphasized as the best tool in the diagnosis of CBD (6, 7). The reasons for this suggestion is very well explained in varions reports, together with its superiority over static urologic or radiographic studies (4, 6, 7). In our cases, we also were able to show the diverticula with the same study; however, we note that ultrasonographic examination also revealed the diverticula in both of the patients. Fluoroscopic VCUG yielded the additional diagnosis of VUR in the second case, a fact that we consider a superiority compared with USG.

Indications for surgical intervention are controversial in the literature. While a group of authors advocate surgery solely in certain cases with strict criteria, some suggest not waiting for secondary complications to occur (3, 4). The surgical indications as stated by Verghese and Belman consist of persistent or recurrent UTI with large post-voiding residuals; high-grade reflux with diverticular involvement or ureteral or bladder outlet obstruction caused by diverticulum (4,8). It is indeed obvious that asymptomatic cases with small diverticula can be followed-up conservatively; we agree with Pieretti that all symptomatic patients should be operated on (3). In our second case with only a relatively moderate grade of reflux, severe renal damage had occurred, probably due to optimal conditions for infection owing to diverticulum. It should also be noted that VUR -whatever the grade is - secondary to a diverticulum does not

resolve with linear growth; and cases requiring nephrectomy with reflux related to diverticulum have been described (3,6). We also emphasize the progressive nature of the entity as in case 1.

Operation for CBD have mainly consisted of diverticulectomy, closure of the defect and ureteral reimplantation as necessary. Various techniques for diverticular dissection have been described, through intra- or extravesical approach or combined (8). We were very satisfied with the extravesical approach by filling the bladder with saline via a Foley catheter, compared with the combined intra-extravesical approach. In both our cases we had to reimplant the ureters because of their involvement with the diverticula, however this may not be necessary in patients without ureteral involvement within the diverticula (7).

We conclude that USG is beneficial in the diagnosis of CBD, although we support the use of VCUG under fluoroscopy to gain extra information about associated VUR. All symptomatic cases of CBD should be operated on considering the progressive nature of the entity .

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REFERENCES

1. Gearhart JP. Bladder and urachal abnormalities: the extrophy-epispadias complex. In. Kelalis PP, King LR, Belman AB, (eds): Clinical Pediatric Urology. Philadelphia, Pennsylvania: WB. Saunders Company; 1992. p. 579-619.
2. Homsy YL. Bladder and urachus. In. O'Donnell B, Koff SA, (eds): Pediatric Urology. Oxford, Butterworth-Heinemann; 1997. p. 482-494.
3. Pieretti RV, Pieretti-Vanmarcke RV. Congenital bladder diverticula in children. J Pediatr Surg 1999; 34: 468-473.
4. Verghese M, Belman AB. Urinary retention secondary to congenital bladder diverticula in infants. J Urol 1984;132: 1186-1188.
5. Stage KH, Tank ES. Primary congenital bladder diverticula in boys. Urology 1992; 40: 536-538.
6. Hernanz-Schulman M, Lebowitz RL. The elusiveness and importance of bladder diverticula in children. Pediatr Radiol 1985; 15: 399-402.
7. Ulman İ, Avanoğlu A, Genç A, Şahin AH, Gökdemir A. Congenital bladder diverticula in children. Pediatrik Cerrahi Dergisi 1996; 10: 13-16.
8. Sheldon CA, Essig KA. Congenital bladder diverticulum causing bladder outlet obstruction: Case report and review of literature. Pediatr Surg Int 1994; 9: 141-143.