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Acute renal failure in a neonate due to bilateral primary obstructive megaureters

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ABSTRACT

A male newborn was referred to our institute for postrenal acute renal failure with bilateral hydroureteronephrosis, electrolyte imbalance, and anuria. Voiding cystourethrography revealed no vesicoureteral reflux or posterior urethral valves. We performed bilateral percutaneous nephrostomy on the 9th post-natal day. The serum creatinine level improved to the normal range. Antegrade pyelography revealed bilateral uretero-vesical junction stenosis. Subsequently, we inserted bilateral double J urethral stents at 1 month. Bilateral ureteroneocystostomy without ureteral folding was performed at 6 months. The postoperative course was uneventful. This is the second case of postrenal acute renal failure with bilateral primary obstructive megaureters in a neonate.

1. Introduction

Primary nonrefluxing megaureter comprises 5%–10% of all cases of prenatal hydronephrosis, and is more common in males [1,2]. It is reported that 80–90% of primary obstructive megaureter (POM) resolves spontaneously, and cases of acute renal failure are very rare [3–7].

In cases with post-obstructive renal dysfunction, the primary surgical options include endoscopic stenting, a staged reconstructive approach with temporary diversion, such as a loop cutaneous ureterostomy [8].

We report here, a case with bilateral POM in a neonate, with rapidly deteriorating renal function, in whom we performed staged urinary tract drainage and ureteral reimplantation.

1.1. Case

A male infant weighting 3074 g was born at 38 weeks of gestation by vaginal delivery. The mother received no prenatal care during pregnancy. The infant had normal urination after birth. However, on post-natal day 9, abdominal distention was observed. Abdominal ultrasonography revealed bilateral hydroureteronephrosis. He was hospitalized with anuria, failure to thrive, and weight gain of only 650 g in 6 days.

Laboratory data revealed azotemia characterized by elevated BUN, 43 mg/dL, and serum creatinine, 4.17 mg/dL, hyponatremia (116 mEq/L), hypochloremia (86 mEq/L) and hyperkalemia (7.5 mEq/L).

Computed tomography revealed bilateral hydroureteronephrosis until the vesicoureteral junction, without bladder distension (Fig. 1).

Voiding cystourethrography revealed no posterior urethral valves or vesicoureteral reflux.

Bilateral percutaneous nephrostomy was performed. Antegrade pyelography revealed tortuous and dilated upper ureters with incomplete obstruction at the bilateral vesicoureteral junction (Fig. 2).

Within 24 h, the serum creatinine decreased to 1.28 mg/dL. At 1 month, we inserted bilateral double-J ureteral stents sized 3.7 Fr and length 18 cm.

Bilateral ureteroneocystostomies were performed at 6 months after birth, using the Cohen crosstrigonal technique. The postoperative course was uneventful. Final laboratory data revealed BUN 12 mg/dL, serum creatinine 0.17 mg/dL, Na 140 mEq/L, Cl 104 mEq/L, K 4.5 mEq/L.

2. Discussion

Primary nonrefluxing megaureter is a congenital dilatation of the ureter not associated with vesico-ureteric reflux, bladder outlet obstruction or any other structural anomaly, such as ureterocele or ectopic ureter [1,2]. It has been reported that 85% of POM patients who did not require surgery had spontaneous resolution of the hydroureteronephrosis, at a median follow up of 17 months [6]. On long follow up (7.3 years), no patient showed increased dilatation; the dilation reduced in 66.6% and was stable in 33.3% of patients [7]. Only one case in a

Abbreviations: POM, primary obstructive megaureter; VCUG, voiding cystourethrogram

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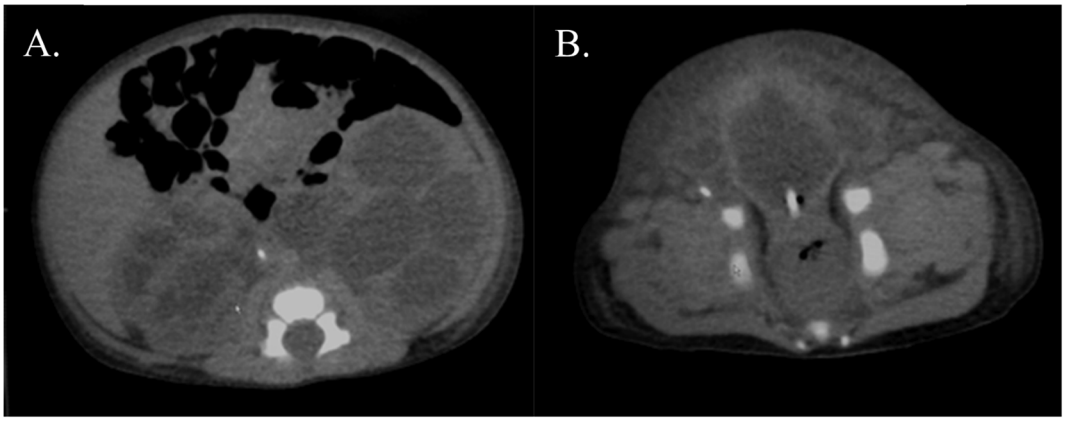

Fig. 1. Plain computed tomography revealed: A. bilateral hydroureteronephrosis in the upper urinary tract, and B. non-distended bladder.

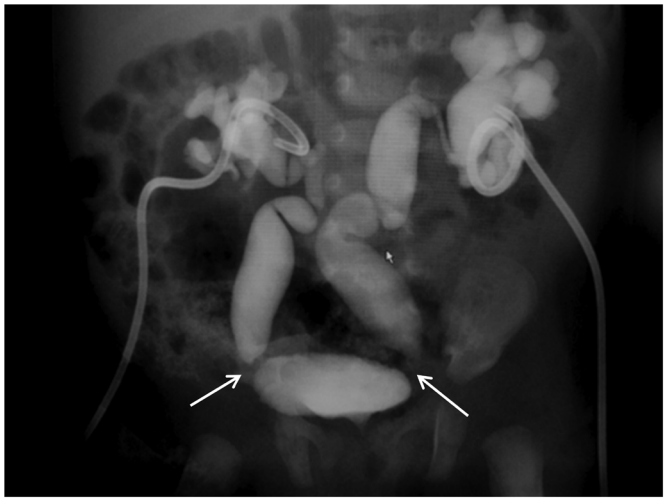

Fig. 2. Antegrade pyelography revealed tortuous dilated upper ureter with incomplete obstruction at the bilateral vesicoureteral junction.

neonate with bilateral POM developed acute renal failure, in whom ascites occurred due to extravasation [9]. To the best of our knowledge, our report is the second case of bilateral POM in a neonate with acute renal failure, but without ascites.

Ultrasound is the initial procedure performed in a child suspected with any urinary tract abnormality. The dilated ureter can be traced from the renal pelvis to its entry into the bladder; it is often tortuous and peristaltic, and anti-peristaltic waves are frequently seen. If a megaureter is seen, the second investigation should be a voiding cystourethrogram (VCUG), which helps to distinguish between a non-refluxing and refluxing megaureter. This procedure is invaluable to detect a possible cause for the secondary megaureter, such as posterior urethral valves or a neuropathic bladder. In our case, ultrasound showed bilateral hydroureteronephrosis; however, VCUG did not reveal posterior urethral valve or bilateral vesicoureteral reflux. Thus, ultrasound is useful and less-invasive for initial evaluation of POM in a neonate.

A cutaneous ureterostomy is safe and easy to perform, for temporary diversion [10]. Recently, Ransley et al. [11] have proposed inserting a double-J ureteral stent in the megaureter, to bypass the obstruction. This technique, though not widely adopted, has some advantages over ureterostomy, because it avoids an external stoma, allowing a free flow of urine into the bladder, and often reduces the diameter of the megaureter. In this case too, double-J ureteral stents for 6 months were useful in reducing the megaureter and staged reconstruction without ureteral tapering. Complications (stent migration, stone formation, or infection) have been reported in 31% of the patients [12]. However, in our case, temporal double-J stents were successful without any complications.

In conclusion, our rare case of bilateral POM in a neonate with acute renal failure was successfully treated with multistage urinary tract drainage and ureteral reimplantation.

Patient consent

Consent to publish the case report was not obtained. This report does not contain any personal information that could lead to the identification of the patient.

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Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Conflict of interest

The following authors have no financial disclosures: (S.N., M.M., R.M., S.S.)

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