Asymptomatic bilateral delayed ureteral obstruction following dextranomer/hyaluronic acid copolymer (Deflux) injection for vesicoureteral reflux.: A case report

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ABSTRACT

We here present a case of a 4-year-old girl who exhibited an asymptomatic bilateral de novo hydroureteronephrosis seven months after undergoing endoscopic treatment for bilateral vesicoureteral reflux. The child underwent an open bilateral reimplantation. Intraoperatively, a 14 mm nodule on the right and a 16 mm on the left located periureteral orifice were observed. When a small incision was made on nodules, a yellowish-white mucinous fluid flowed out.

Introduction

Endoscopic injection of bulking agents for the treatment of vesicoureteral reflux (VUR) has become a therapeutic alternative to conservative medical treatment and surgical reimplantation of a refluxing ureter. We report a case of asymptomatic bilateral delayed obstruction after bilateral endoscopic injection of dextranomer/hyaluronic acid copolymer (Dx/HA) that required surgical repair.

A case report

A 4-year-old girl presented us with a recurrent febrile urinary tract infection. Ultrasound demonstrated no hydronephrosis and bladder wall appeared smooth. Dimercaptosuccinic acid (DMSA) renal scan revealed bilateral renal scarring. Voiding cystourethrogram (VCUG) showed grade 2 on the right and grade 3 on the left VUR (Fig. 1a). Although she had sometimes experienced night incontinence, obvious bladder dysfunction was not detected. A bilateral combined hydrodistension-implantation technique (HIT)/subureteral transurethral injection (STING) procedure was performed using of 0.7ml of Dx/HA on the right side and 1.0ml on the left side. Endoscopic findings after Dx/HA injection were shown in Fig. 1b.

On initial postoperative ultrasound at 2 weeks later, hydronephrosis was not detected in both kidney (Fig. 1c). At seven months, ultrasound imaging revealed an asymptomatic bilateral de novo hydronephrosis. At ten month postoperatively, findings had deteriorated with bilateral hydroureteronephrosis. Significant distal ureteral dilation were seen on transverse images of bladder (Fig. 1d). Mercaptoacetyltriglycine (MAG3) diuretic renal scan showed delayed washout on both kidney. CT scan demonstrated bilateral hydroureteronephrosis and fluid collection on bilateral ureterovesical junction (Fig. 2a). The child underwent an open bilateral reimplantation immediately after CT examination. Intraoperatively, a 14 mm nodule on the right and a 16 mm on the left located periureteral orifice were observed (Fig. 2b). When a small incision was made on nodules, a yellowish-white mucinous fluid flowed out from both sides (Fig. 2c). The Dx/HA material was irrigated with saline, and complete evacuation of the cavity was achieved. Macroscopically, the fluid replaced the usual appearance of the Dx/HA. The distal ureters were excised and a Cohen cross-trigonal ureteral reimplantation was performed. Follow-up ultrasound at fifty days postoperatively showed a resolution of hydronephrosis. The examination of Dx/HA material culture was negative. Pathological analysis revealed giant cell reaction in setting of acute and chronic inflammation encapsulating dextranomer microspheres and it was located in the serosa (Fig. 2d).

Discussion

Ureteral obstruction after endoscopic treatment of VUR with Dx/HA was first described by Snodgrass. It was regarded as a rare complication at first. Vandersteen et al. reviewed cases from multiple centers and noted 7 of 1155 ureters (0.6%) showed postoperative obstruction.

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Fig. 1. Voiding cystourethrogram (VCUG) before initial procedure showed grade 2 on the right and grade 3 on the left VUR (a). Endoscopic findings after Dx/HA injection. A bilateral combined hydrodistension-implantation technique (HIT)/subureteral tansurethral injection (STING) procedure was performed using of 0.7ml of Dx/HA on the right side and 1.0ml on the left side (b). On initial postoperative ultrasound at 2 weeks later, hydronephrosis was not detected in both kidney (c). Renal/bladder ultrasound scan at ten months after Dx/HA injection demonstrated bilateral hydroureteronephrosis. Dx/HA bulges in both sides and significant distal ureteral dilations were seen on transverse images of bladder (d).
However, several studies have reported cases of ureteral obstruction after Dx/HA injection so far. Besides, some of those obstructions occurred following after successful endoscopic treatment without any symptom. Rubenwolf et al. reported a case with upper urinary tract obstruction necessitating ureteral reimplantation 63 months after Dx/HA injection. In our case, 0.7ml of Dx/HA on the right side and 1.0ml on the left side were injected. However, the finding at surgery was of the volume of material removed greater than that injected. It is suggesting an exaggerated local tissue response caused ureterovesical junction obstruction. Possible risk factors, such as a preoperative bladder mucosal inflammation, the injection of greater volume and repeat injection were mentioned by several researchers but more investigation is warranted.

Conclusion

We encountered a case of asymptomatic bilateral delayed ureteral obstruction following Dx/HA injection. It should be kept in mind and address it when obtaining informed consent that silent UVJ obstruction might occur during the follow-up after Dx/HA treatment.

Declaration of competing interest

None.

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