

Endoscopic correction of vesicoureteral reflux among children in Kosovo

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Abstract

Aim: The University Clinical Center is the single hospital center in Kosovo for endoscopic treatment of vesicoureteral reflux in children. This modern treatment has started since 2009. The aim of this study was to show the results of endoscopic treatment of vesicoureteral reflux in Pediatric Surgery Clinic-Pristina, Kosovo.

Methods: From March 2009 to December 2013, fifty-five children (78 ureters) with VUR were treated with subureteral injection of Deflux (dextranomer hyaluronic acid copolymer). Three months postoperatively, a voiding cystourethrogram was performed as a control treatment.

Results: The study included 78 refluxing ureters of 55 patients (40 females and 15 males) with VUR. There were 22 children with refluxed ureters altogether and 33 children had a unilateral reflux. The age of the patients ranged from six months to 12 years old. The mean age of the patients was 5.2 years. There were no complications, but with few recurrences of VUR. In six patients (16.6%), endoscopic treatment with Deflux was conducted twice, while in three patients (8.5%), the endoscopic treatment with deflux was performed three times, because of recurrence.

Conclusion: We recommend the endoscopic Deflux injection as first line treatment for children with vesicoureteral reflux. Endoscopic treatment is a minimally invasive method for treatment of vesicoureteral reflux in pediatric patients and it is not associated with complications.

Keywords: deflux, endoscopy, vesicoureteral reflux.

Introduction

The goals of medical intervention in patients with vesicoureteral reflux (VUR) are to allow normal renal growth, prevent infections and pyelonephritis, and prevent renal failure. The VUR is defined as the retrograde flow of urine from the bladder back into the ureters and renal collecting system due to a failure of the ureterovesical valve mechanism (1). The VUR is diagnosed in approximately 1% of the children and induces pyelonephritis (2). It occurs at a frequency of about 30% in children with urinary tract infection. Treatment intends to prevent pyelonephritis and to preserve renal function and most children diagnosed with VUR receive antibiotic prophylaxis regardless of VUR grade (3).

We present our experience in Kosovo with endoscopic treatment of vesicoureteral reflux in children by subureteral Deflux (dextranomer/hyaluronic acid copolymer) injection (4). Endoscopic treatment (ET) for vesicoureteral reflux (VUR) has become an established alternative to long-term antibiotic prophylaxis and ureteral reimplantation (5). The VUR is one of the many treatable risk factors in the development of urinary tract infection (UTI). This study analyzed the results of our short experience in Kosovo of ET for vesicoureteric reflux. In our center, VUR in pediatric patients has been treated with deflux (dextranomer hyaluronic acid copolymer) injection since 2009. The aim of

this study was to show the results of ET in our center.

Methods

In this retrospective study, 55 patients with primary VUR were included. We collected data from the medical history of the patients treated in Pediatric Surgery Clinic in Prishtina, Kosovo, during 2009-2013. The radiological grading of VUR was done according to the international system introduced by the International Reflux Study Committee in 1985. Five grades were defined based on the extent of reflux and degree of dilation of the upper tract on imaging (6).

Results

All patients in this study underwent endoscopic correction as a daily procedure. The ET was performed under general anesthesia and lasted approximately 30 minutes. The largest number of the patients needed only one injection on the inferior part of ureteral orifice. Only in some patients, when an adequate sub-ureteral mound was not attained, another puncture was performed at a different location, depending on local findings (4,6). Between March 2009 and December 2013, a total number of 55 children with VUR were treated with sub-ureteral injection of Deflux (Table 1). This group included 15 male (27%) and 40 female (73%) patients, with a total of 78 treated ureters, and their mean age was 5.2 years (from 6 months to 12 years old).

Table 1. Demographic data of the patients

Variable	Number of patients
Sex:	
Males	15
Females	40
Total	55
VUR laterality:	
Bilateral	22
Unilateral	33
Refluxing ureters	78

Nine patients (16.3 %) underwent a second endoscopic Deflux injection, because VUR did not

resolve after the first treatment (Figure 1). In six patients (16.6%) endoscopic injection was done

twice (Figure 2), while in three patients (8.5%) it was carried out three times, because of recurrence. In three children (VUR grade V), the endoscopic injection was repeated twice and in two children (grade V) it was repeated three times (Figures 1-2). Ultrasonography and urine culture were performed two

weeks after injection in our center. Three months after the injection, the voiding cystourethrogram (VCUG) confirming the successful treatment of VUR, or the presence of VUR (the failures) was also performed. Urine culture was done regularly in patients for whom the first or the second injection failed.

Figure 1. Second injection of Deflux

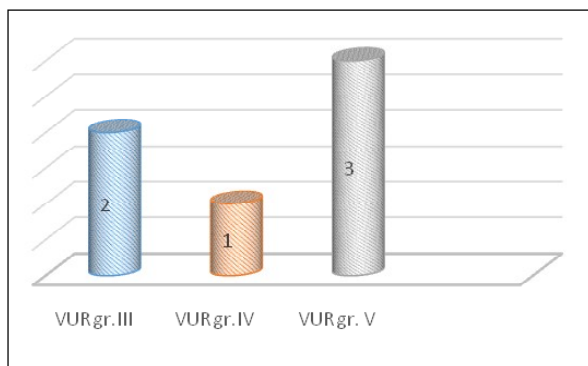
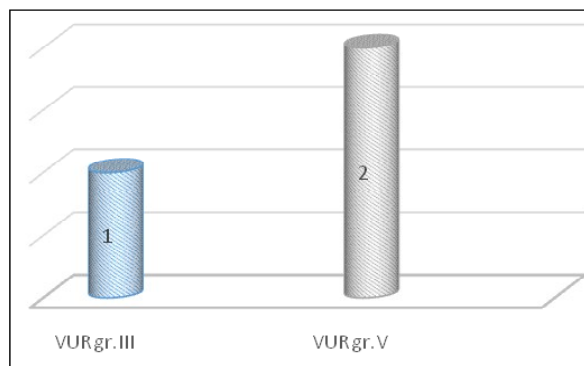


Figure 2. Third injection of Deflux



Discussion

Vesicoureteral reflux is the most common uropathy affecting children. Compared to children without VUR, those with VUR have a higher rate of pyelonephritis and renal scarring following urinary tract infection (7). Although spontaneous resolution in primary reflux is common, surgical intervention may be necessary in patients with persistent reflux or recurrent pyelonephritis (7).

We analyzed the results of 55 patients with primary VUR (78 refluxing ureters) who underwent injection for urinary tract infections (UTI) to identify factors associated with successful deflux injection. Success was defined as resolution of VUR after first injection on postoperative voiding cystourethrogram performed three months following ET. The number of patients in this research, with primary VUR, showed a cure rate of 83.6% after one deflux injection and up to 94% after a second deflux injection.

The success rate in our patients is similar to the success rate reports from other studies (Table 2). Pinto et al. reported a success rate of 84%, while Puri et al. reported a success rate of 96% (8-12). Our results are very close to the success rate achieved with open surgical treatment (12,13). Capozza et al.

demonstrated that ET with Deflux proved to be effective and well-tolerated during long-term follow up (7.5 years) in children with vesicoureteral reflux (14). The mean follow up duration of our patients was 24 months. Patients treated with injection deflux in our study did not have complications, with only seven patients experiencing postoperative pain (15). Failure of the endoscopic treatment might be the consequence of inadequate position of injection due to the poor visibility of operation field. The VUR resolution was defined as absent or converted high grade to grade 1 reflux. The patients who failed at first Deflux injection underwent a second or a third injection. Ureter reimplantation (open surgery) was performed only in case of unsuccessful reflux correction after three injections.

Our clinic is the only clinic in Kosovo that deals with VUR treatment with deflux, and despite the modest experience, the results are very good. In our series, the success rate after one injection was 83.6%, whereas the success rate after the second injection was 94%. The ET reflects an excellent option compared to open ureteral reimplantation for VUR. There were no complications associated with endoscopic injection of Deflux in this study. Pain after operation was reported in seven patients, and did not require any surgery intervention.

Table 2. Endoscopic treatment with Deflux for primary VUR in different series after first injection

Series	Ureters	Success rate
Kirsch et al. (8)	139	93%
Yu and Roth (9)	162	93%
Pinto et al. (10)	86	84%
Pristina	78	84%

Conclusion

Endoscopic treatment (ET) of the children with primary VUR is the most comfortable method for patients compared with the open surgery. The ET advantages include: a short stay in hospital, a very low rate of complications and a short

operating time. We strongly recommend the ET to the majority of VUR cases that come to our center in Kosovo. Hence, in our center, the ET is the first step of treatment in children with primary VUR.

Conflicts of interest: None declared.

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