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EFFECTIVENESS OF ENDOSCOPIC TREATMENT OF DOUBLE URETER URETEROCELE IN CHILDREN

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Abstract. A retrospective study of 155 pediatric patients with ureterocele of a duplicated ureter was conducted. The age of the patients at the time of surgery ranged from 5 days to 17 years (median, 8.0 months). Intravesical ureterocele was detected in 108 children (69.8%), and extravesical ureterocele was detected in 47 patients (30.2%).
Keywords: ureterocele; ureteral duplication; transurethral dissection.

INTRODUCTION

Ureterocele is a congenital anomaly of the ureter development, characterized by cystic expansion of its distal section due to narrowing of the orifice, which leads to impaired urodynamics and the development of megaureter. There are several classifications of ureterocele based on anatomical features. Two features have the greatest clinical significance: the presence or absence of ureter duplication and the localization of ureterocele. Previously, ureterocele was divided into orthotopic, not associated with ureter duplication, and ectopic, associated with a double ureter [1]. Currently, the most commonly used classification distinguishes between ureterocele of a doubled and non-duplicated ureter, as well as intravesical ureterocele located in the bladder, and extravesical ureterocele opening in the neck of the bladder or urethra [2].

MATERIALS AND METHODS

Treatment of children with ureterocele due to ureteral duplication is a challenging task for pediatric urologists. The main goals of treatment are to preserve renal function, eliminate urinary incontinence if present, and prevent urinary tract infections (UTIs) with a minimum number of surgical interventions [3]. There is no generally accepted universal approach to achieve these goals. When choosing a treatment for ureterocele, the patient's age, the degree of renal dysfunction, the size and location of the ureterocele, the degree of megaureter, the presence of vesicoureteral reflux (VUR), and bladder neck obstruction are taken into account. Transurethral incision of ureterocele (TURU) is the most popular, safe, and minimally invasive option for the primary treatment of ureterocele [3]. Studies have shown that in many patients, endoscopic decompression of ureterocele is the first and definitive procedure, and more invasive subsequent operations should be performed only if strictly indicated in the presence of clinical manifestations of the disease, regardless of the presence of VUR and the degree of loss of renal function [1]. However, there are also proponents of a more invasive approach for the primary treatment of ureterocele [2]. It consists of heminephrectomy of the upper pole of the kidney or reimplantation of the ureter with removal of the ureterocele. Proponents of this approach justify it by the fact that in most cases after TURU, repeated interventions are necessary due to the non-functioning upper half of the kidney and UTI against the background of VUR.

RESULTS AND DISCUSSION

In case of intravesical ureterocele, a vertical incision of its wall in the distal part was made for 5 mm. In case of extravesical ureterocele, its entire urethral part was dissected up to the intravesical section. Drainage of the urinary bladder with a urethral catheter was used only in cases of emergency surgery in 12 patients (7.7%) with obstructive pyelonephritis or obstruction of the ureterocele of the bladder neck. On the next day after the surgery, all children underwent ultrasound examination to confirm the elimination of obstruction. Long-term antibacterial prophylaxis was prescribed to

prevent UTI for the period of outpatient observation until a control X-ray examination. All patients who underwent endoscopic treatment, after 6-12 months. After the operation, an examination was performed, including laboratory and ultrasound studies, micturition cystourethrography. In toilet-trained children, uroflowmetry was performed to assess urination. Based on the examination results, the dynamics of dilation of the ureter and renal pelvis-calyceal system, the presence of UTI, urination disorders and VUR were assessed. Static nephroscintigraphy with dimercaptosuccinic acid labeled with the isotope technetium TC-99m was used to assess the functional state of the kidney. The degree of renal dysfunction was determined by the intensity and uniformity of accumulation of the radiopharmaceutical. Depending on this, we classified the state of the upper pole as non-functioning, poorly functioning and normally functioning.

To check the normality of the distribution of the obtained sets of quantitative characteristics, the Kolmogorov–Smirnov test was used. When comparing independent sets, the Mann–Whitney U test was used. To analyze the qualitative characteristics, the correspondence coefficient c2 and the two-sided version of the Fisher exact test were used. Regardless of the analysis method, the differences between the groups were considered statistically significant with a probability of an error-free forecast of at least 95% ($p < 0.05$).

In the early postoperative period (within one month after surgery), complications requiring repeated endoscopic intervention occurred in 2 patients (1.3%). In the first case, bladder tamponade developed on the day after surgery due to bleeding from the incision edge on the ureterocele wall. Repeated cystoscopy was performed, tamponade was eliminated, and bleeding was stopped by coagulation of the bleeding vessel.

CONCLUSION

TURU for ureteral duplication is an effective and safe minimally invasive method for eliminating obstruction, which can be used at any age. The incidence of complications in the early postoperative period that required repeated endoscopic surgery was 1.3%, recurrence of obstruction was noted in 0.6% of patients. VUR on the side of the ureterocele after TURU was diagnosed in 72.3% of patients, repeated surgical intervention in the late period after TURU was required in 62.5%. Surgical treatment was performed only in the presence of recurrent UTIs and urinary dysfunction caused by ureterocele. Risk factors associated with the need for reoperation were VUR on the side of the ureterocele and the absence of function of the upper pole of the kidney.

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