Endourology

Unilateral complete ureteral duplication with calculi obstructing both limbs of the left side

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Introduction

The duplex system is defined as a kidney with two pyelocaliceal systems which can be accompanied by single, bifid (partial ureteral duplication) or complete double separate ureters inserting to the bladder. Collecting system duplication is one of the most common congenital anomalies of the genitourinary tract that is due to incomplete fusion of upper and lower pole of the kidney. Ureteral duplication has been reported in 0.9% of autopsies, its incidence rate is 0.7–4% and presents on 0.3% of excretory urograms. The prevalence of this anomaly is higher in females. Ureteral duplication usually is asymptomatic and is diagnosed accidental but can accompany with urinary infections, stone, vesicoureteral reflux, ureterocele or other congenital complications. The presence of urinary calculi in these individuals is because of partial urinary stasis, but different irrelevant factors to ureteral duplication may affect. We introduce a case of unilateral complete ureteral duplication with obstructing calculi in both left ureters that treated endoscopic because of extracorporeal shockwave lithotripsy (ESWL) failure to break down the proximal ureteral stones.

Case presentation

A 47 years old female with a history of colicky pain on her left flank for one week which had nausea but no fever. The costovertebral angle tenderness detected in the physical exam. Renal function tests, complete blood count was normal. Microscopic hematuria was seen in urinalysis. The patient evaluated by sonography in which the reduction of renal cortex diameter on lower pole of the left kidney, duplication of left pyelocaliceal system with 12 mm calculus in lower calyx, 10 and 12 mm calculi in the proximal ureters in the distance of 44 mm from left renal pelvis and moderate hydroureterephrosis on upper and lower poles of left kidney reported. The patient undergone intravenous pyelography (IVP) that left kidney duplex system demonstrated obviously (Fig. 1, a, b and c). The excretion of the left kidney in comparison to right, and upper pole of left kidney in comparison to the lower pole had definitely delay. Two opaque densities with the same size reported on sonography observed in the proximity of L3 vertebral body and upper edge of the L4 vertebral body on the left side conforming with left ureters (Fig. 1, a). Pyelocaliceal system dilatation on both upper and lower poles of left kidney observed (Fig. 1, b and c). Due to the size and location of the ureteral stones, the time of patient’s sign and symptoms and absence of urinary infection, ESWL selected as first therapeutic intervention and the patient undergone ESWL two times during one month. Unfortunately, the ESWL failed to break the calculi as they were remained intact on following kidney, ureter, bladder X-ray (KUB) and sonography. Considering the available facilities in our center, we decided to treat the patient endoscopic by Transurethral lithotripsy (TUL) using semi-rigid ureteroscope (Richard Wolf 6.5/8.5 Fr). During ureteroscopy two separate ureteral orifices on the left side and one ureteral orifice on the right side observed. By inserting a safety wire (0.018 Fr) in to the left upper orifice we reached to the stone and passed the safety wire to the pelvis then the stone broke completely by pneumatic lithotripter without pushing back any particles of the stone and finally a double J ureteral catheter (4.8 Fr, 28 cm) inserted and placed. The same steps are done for lower ureteral stone at the same session. The KUB x-ray showed proper placement of double J catheters and successful lithotripsy (Fig. 1, d). The patient discharged and following 2 weeks the double J catheters removed after KUB x-ray and sonography confirmation of stone-free ureters. The patient discharged without any
complication.

Discussion

Unilateral ureteral duplication has been reported 0.8% in American autopsies, while bilateral ureteral duplication is rarer and includes 20–40% of all ureteral duplications. The etiology of ureteral duplication in the majority of cases is due to premature splitting of ureteral buds, remnants of wolffian duct and in some cases because of the presence of two separate ureteral buds. Genetic penetrance of ureteral duplication is incomplete and autosomal dominant and the highest prevalence has been reported in Caucasian females. The clinical presentations of ureteral duplication are various and age-related. In the majority of cases with duplicated ureters, the patients are asymptomatic and usually are diagnosed accidental. The most common clinical presentation of ureteral duplication is recurrent UTI in children and VUR, flank pain and obstruction in adults. Stone formation is a potential comorbidity affects adults with ureteral duplication. Some cases of ureteral duplication with ureterocele stone have been reported but complete ureteral duplication with separate orifices in the bladder is very rare. In these patients renal morphology, ureteral condition and renal function should be evaluated. Complete ureteral duplication without obstruction can be missed by sonography. Unequal hydronephrosis between upper and lower poles of the kidney is strongly supportive for complete ureteral duplication. IVP can distinguish complete and partial ureteral duplication. IVP despite sonography, can demonstrate the renal function but spiral CT urogram and magnetic resonance imaging (MRI) much better can reveal the site of ureteral orifices. To the knowledge we have, the present case is a rare case of unilateral complete ureteral duplication with ureteral stone without accompanying comorbidities such as ureterocele and obstruction uropathy in which as the first therapeutic intervention, the patient underwent ESWL and following TUL by semi-rigid ureteroscope and pneumatic lithotripter as the ESWL failed to break down the stones.

Conclusion

It is very important to diagnose urinary tract anomalies prior to
Interventions and supplementary evaluations should be considered. In relation to complete ureteral duplication special attention should be considered. Reporting this kind of rare cases may help better therapeutic decision making.

Conflicts of interest

None.

Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.eucr.2018.03.004.

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