ORIGINAL RESEARCH PAPER

Urology

KEY WORDS:
URETEROCELE, DUPLEX MOEITY SYSTEM, MIXED CALCULI

URETEROCELE – DORMANT DILATATION IN DUPLEX SYSTEM – A CASE REPORT

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ABSTRACT

Ureteral duplications are a common congenital anomaly of the kidney and the urinary tract system. Generally, duplex renal systems are asymptomatic and diagnosed incidentally; however, several conditions requiring treatment have been observed in association with duplex systems: obstruction, reflux disease, and urinary stones Concerning obstruction, the upper moiety may be at a greater risk caused by ureterocele and lower moiety is at risk of reflux nephropathy .Few cases have been reported of duplication and multiple stones inside the duplex moiety.We report a 21-year-old female who presented with right flank pain since last one years. Abdominal CT scan showed duplex moiety on right side containing multiple stones. The patient underwent transurethral incision of the ureterocele with fragmetaion and extraction of stones.The postoperative course was uneventful without complications

CASE REPORT:

A 21 year old female presented with intermittent right flank pain since on year .She had noother symptoms such as fever, UTI .Examination findings were not significant and were normal. Blood work up were within normal parameters. USG abdomen and pelvis suggested Duplex moiety system on right side and not conclusive. CT urogram revealed duplex moiety system on right side,upper moiety dilated. Calculus noted in upper calyx.upper ureter dilated,calculus 22 mm in mid ureter. Few calculi measuring 37 x17 mm in distal ureter ,Ureterocele noted. DTPA study revealed normal uptake in left kidney, slow and delayed excretion in right kidney. She underwent Transurethral incision of the ureterocele and right URSL (fragmentation and complete extraction of all stones in the ureter) and DJ stent. Post operative period was uneventful.

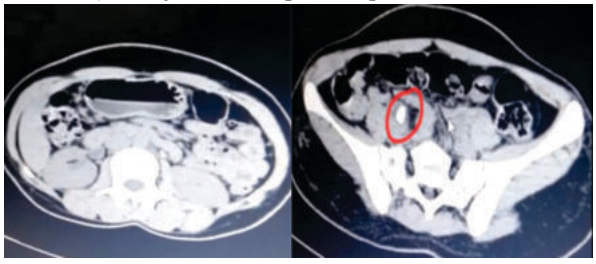

Figure 1- CT KUB Showing Bilateral Kidneys

Figure 2- CT Showing Calculus In Right Mid Ureter

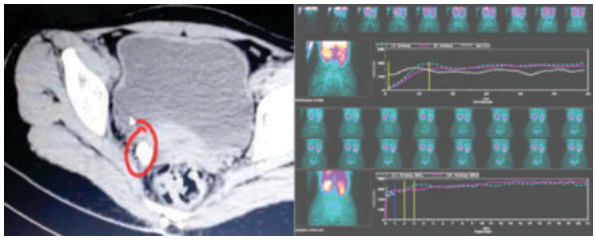

Figure 3- CT Showing Calculus In Right Distal Ureter Along With Urerterocele

Figure 4- DTPA Curves

	LEFT	RIGHT	TOTAL
Uptake %	51.74	48.26	
Peaking time (min)	19.11	19.36	
T 1/2(min) from peaking in (min)	-	9.05	
GFR (ml/min)	52.53	49.0	101.53

Delayed image shows adequate clearance in left kidney and mild stasis in upper pole of right kidney and adequate clearance in rest of right kidney.

Figure 5 – DTPA Interpretation

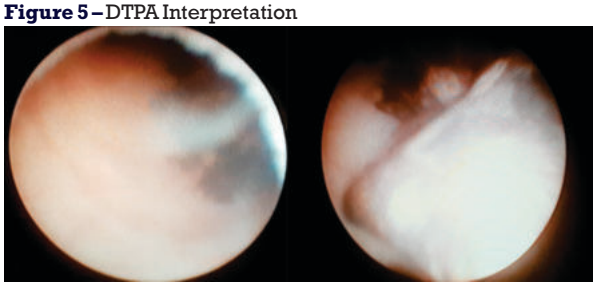

Figure 6 – Intra Op Picture Showing Wide Orifice After Incising The Ureterocele

Figure 7 – Stones Visualised In The Upper Moiety

Figure 8 – Extracted Stones

DISCUSSION:

Ureterocele is a cystic dilation of the distal aspect of the ureter that is located either within the bladder or spanning the bladder neck and urethra [2]. It is a developmental anomaly

and while its pathogenesis is unknown, several theories have been proposed, however the most accepted mechanism is failure in regression of the Chwalla membrane which is a membrane between the urogenital sinus and the developing ureteral bud [4].The incidence of ureteroceles is 1:4000 individuals, occurring 4 times more in females with a slight predominance on the left side and 10% of the cases being bilateral [8]. Ureteroceles have diverse presentations ranging from life-threatening sepsis, renal failure, recurrent urinary tract infections (UTIs), to no symptoms at all being detected incidentally or by antenatal ultrasonography [6].

These variable presentations are a reflection of the numerous types of ureteroceles, hence there are multiple classification systems such as the Stephens classification which depends on the size and location of the ureteric orifice or the functional based classification by Churchill, however due to their complexity these systems have gained less popularity and more simplified system was established by the American Academy of Pediatrics is more frequently used which classifies ureteroceles to intravesical (orthotopic) ureterocele or ectopic (if part of the ureterocele extends to the bladder neck or urethra permanently) [7]. According to Stephens classification, intravesical ureteroceles may be stenotic (40%) or non-obstructive (5%), while ectopic ones may be sphincteric (40%), sphincterostenotic (5%), cecoureterocele (5%) or blind (5%) [8]. In most series 60–80% of ureteroceles are ectopic as opposed to intravesical and 80% of ureteroceles are associated with the upper moiety of a complete duplication [9],

During embryonic development, two ureteral buds rarely develop independently from a single mesonephric duct, resulting in a duplex kidney with ureteral duplication Even rarer is unilateral complete ureteral duplication with single renal parenchyma drained by two pyelocaliceal systems. Urinary stone formation is possible comorbidity in patients with a duplex system. There have been few reports of patients with duplex systems and urinary stones who also have ureterocele or collecting system obstruction Complete duplication is usually unilateral. Nevertheless, bilateral cases are also reported . One of the complications associated with duplication is obstruction, which could be calculus (anywhere along the ureter) ,the clinical presentations will vary with age; in pediatric age group the presenting condition is usually recurrent UTIs or urosepsis, incontinence, failure to thrive, urinary tract calculus, abdominal mass, bladder outlet obstruction and vaginal or urethral prolapse, while in the adult population the diagnosis is usually made incidentally, sometimes it presents with intermittent flank pain, recurrent urinary tract infection or calculus [10,11].

The diagnostic imaging starts with ultrasound due to its availability and non-invasive nature, Intravenous urography (IVU), although less commonly performed nowadays may show poor function of the affected side with delayed excretion or no excretion at all, however if the renal parenchyma retains some function a characteristic cobra head sign can be seen due to the opacified urine inside the intravesical ureterocele surrounded by halo sign produced by the wall of the ureter, it is worth mentioning that IVU can still be of importance in cases of confusing anatomy [8].

In general, ureteroceles may be treated with endoscopic incision, upper pole partial nephrectomy, and complete reconstruction at the bladder level or non-operative (conservative) treatment [9]. With regards to our case, the ureterocele was complicated with a ureteral calculus which is not uncommon according to the literature as the incidence of this particular condition lies between 4% and 39% and most stones are solitary and are formed due to stasis and/or infection [10,12]. According to Chtourou et al. who performed a study about stones in ureteroceles in 20 adult patients who were all treated by endoscopic horizontal meatotomy with stone fragmentation and extraction, concluded that endoscopic meatotomy is easy to perform and gives good results and the associated stones constitute an additional argument in favor of endoscopic treatment [13]. There are also multiple case reports in which many of these conditions were managed with endoscopic resection. Endoscopic treatment includes transurethral puncture and transurethral incision; these are applicable mainly to the intravesical types and may be curative in up to 90% of cases [14,15], however these patients required long-term follow-up to monitor renal function, symptoms and occurrence of vesicoureteric reflux [14].

CONCLUSION:

This case is being presented to highlight that asymptomatic duplex renal system may develop symptoms later in life. When identified without symptoms or evidence of renal function compromise, the integrity of the renal moiety should be evaluated and a ureterocele found should be managed and corrected to prevent renal dysfunction

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