

URINARY TRACT INFECTION, SIGN OF DIAGNOSIS OF VESICoureTERAL REFLUX - CASE PRESENTATION

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Abstract

Ureteral abnormalities represent a complex and often confusing subset of urological anomalies that manifest in many ways. However, in the current era, hydronephrosis that is evident on fetal ultrasonography often heralds a ureteral abnormality. (1)

Ureteral duplication is the most common renal abnormality, occurring in approximately 1% of the population and 10% of children who are diagnosed with urinary tract infections. Incomplete ureteral duplication, in which one common ureter enters the bladder, is rarely clinically significant. Alternatively, complete ureteral duplication, in which 2 ureters ipsilaterally enter the bladder, has a propensity for vesicoureteral reflux into the lower pole and obstruction of the upper pole, which can be problematic.

The authors present a case of a very late diagnosed malformation referring to a urinary system, with an already installed reflux nephropathy. The case is about a urinary-renal malformation associated with vesicoureteral reflux, manifested by urinary tract infection, first positive episode diagnosed at high age.

Positive diagnosis was facilitated by laboratory investigations (urine analysis, urine culture, voiding cystourethrography, static renal scintigraphy).(1)

Key words: voiding cystourethrography, urinary tract infection, vesicoureteral reflux, ureter duplication.

Introduction

The pielo-ureteral duplication is a kidney with two pielo-caliceale systems draining two ureters, entering the bladder through two orifices, which are either united or go through a single orifice.(2) Is the most frequent abnormality of ureters. These children are most commonly affected by UTI and pyelonephritis, both in vesico-ureteral reflux and through the obstruction.

The duplicate appears when there is a fast bifurcation of ureteral bud, resulting in a bifid ureter or when there are two ureteral buds risen from mesonephrotic duct, resulting in a double ureter. The two resulted renal units are called poles. Renal surface may reveal a ditch separating the two poles, which have independent vascularity and intrarenal anastomosis. The upper segment is smaller, drained by a single caliceal group and the ureter opens wider caudal into the bladder at the lower pole. The lower pole is bigger,

drained by two potassium and by a well developed pelvis. Often the upper pole gets cut off, and the urography gives the appearance of "Wilted Flower" due to viewing only the lower pole.(3)

From an embryological point of view, the appearance of ureteral duplication with double ureter is subject to the principle of Weigert-Meyer, according to which the ureteral buds cranial revealed on the Wolf channel will have a caudal orifice in the future bladder and those emerged caudal, will have a cranial orifice. This theory explains the presence of the crossing that characterizes the route of double ureters so that in the ureteral duplicate, the upper pole of the ureter opens caudal in the bladder from the lower pole.

Vesicoureteral reflux occurs most frequently in the lower pole since caudal ureter opens sided and cranial into the bladder and has a shorter submucosal trajectory. (1). Vesicoureteral reflux occurs on the upper pole when two orifices are adjacent or when its ureter opens distal to the cervix and therefore does not have any support to the detrusor. (4)

The principles of therapeutic indication are the same as those for primary vesicoureteral reflux, and reimplantation techniques addresses to both ureters as they present commune vascularity in the distal part. Ureteral anastomosis techniques and reimplantation of one ureter may be useful in some cases (4).

Case presentation

The authors present a case of malformation of urinary system late diagnosed, when reflux nephropathy is already installed.

In the Pediatric Surgery Clinic of Constanta County Emergency Hospital has admitted a female patient, aged 11 years and 9 months, for fever and abdominal pain. There wasn't any micturition difficulty, such as pollakiuria or dysuria. Past medical history shows no urinary infections. During the examination we find a child with a weight weakness stature (size 135 cm, weight 30 kg), but no pale skin, with dark urine, without any pathological changes.

Laboratory investigations revealed a WBC count of 20000/mm³, with predominance of granulocytes, ESR = 26 mm / h, normal blood urea and serum creatinine, CRP positive, urine analysis with frequent leukocyte, positive nitrite, pH 7, urine culture showed the presence of E. coli.

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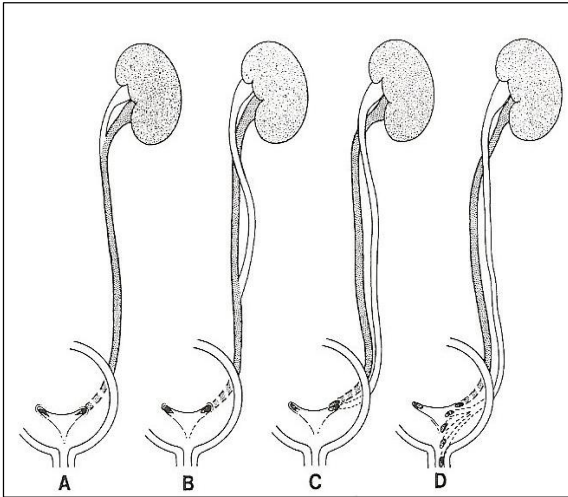


Fig.1. Types of duplication – After Ascraft Pediatric Surgery 2000 Saunders (2).

Imaging investigations showed:

1. Abdominal ultrasound showed pielo-caliceal duplicity right sided with mild right caliceal dilatation, (5)
2. Intravenous urography shows a right kidney with right pielo-ureteral duplicity (5)

3. Voiding cystourethrography showed a grade III of vesicoureteral reflux without dilatation of urinary tract, (Fig.2.)

4. Renal scintigraphy with TcDTPA, already shows the presence of bilateral renal scars, with renal functions still normal GFR= 114ml/min, (FIG.3) (4,6)

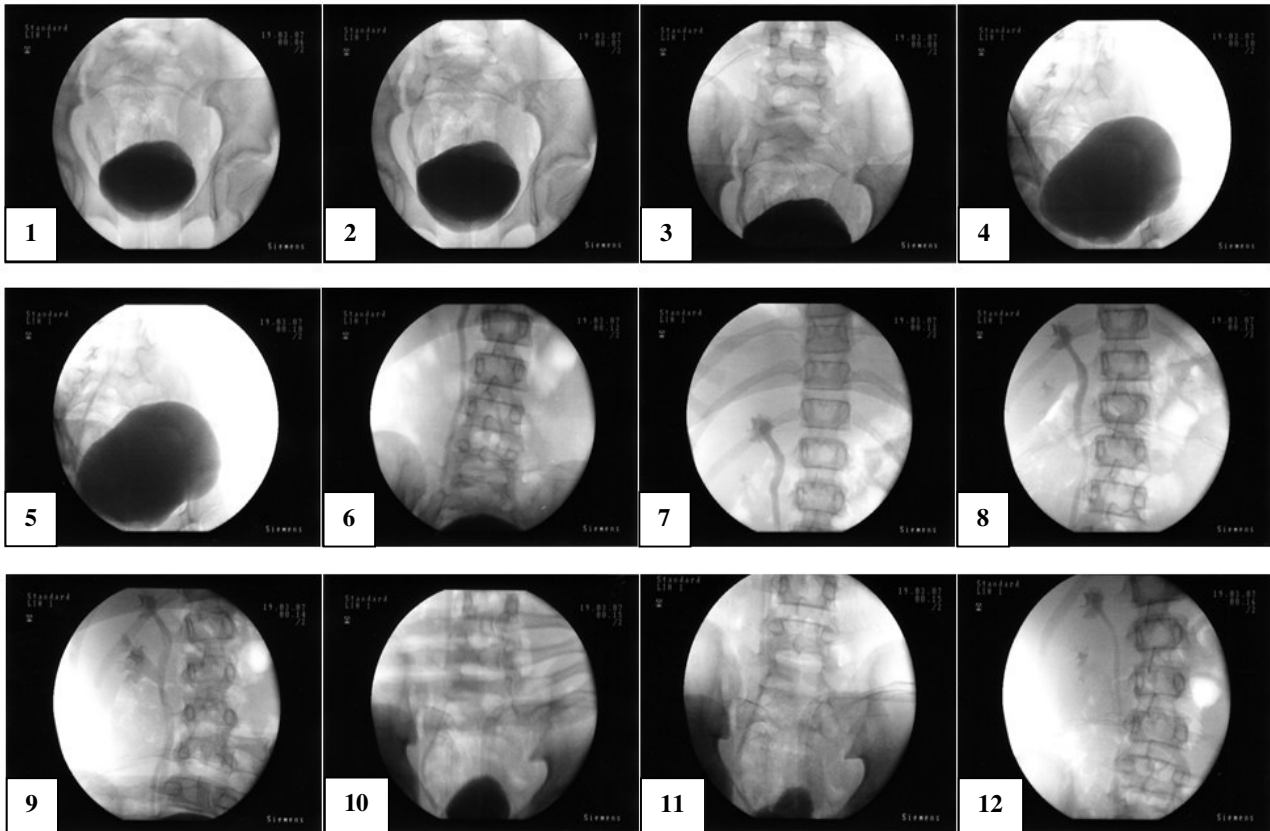


Fig. 2. Voiding cystourethrography Collection Pediatric Surgery Clinic Constanta.

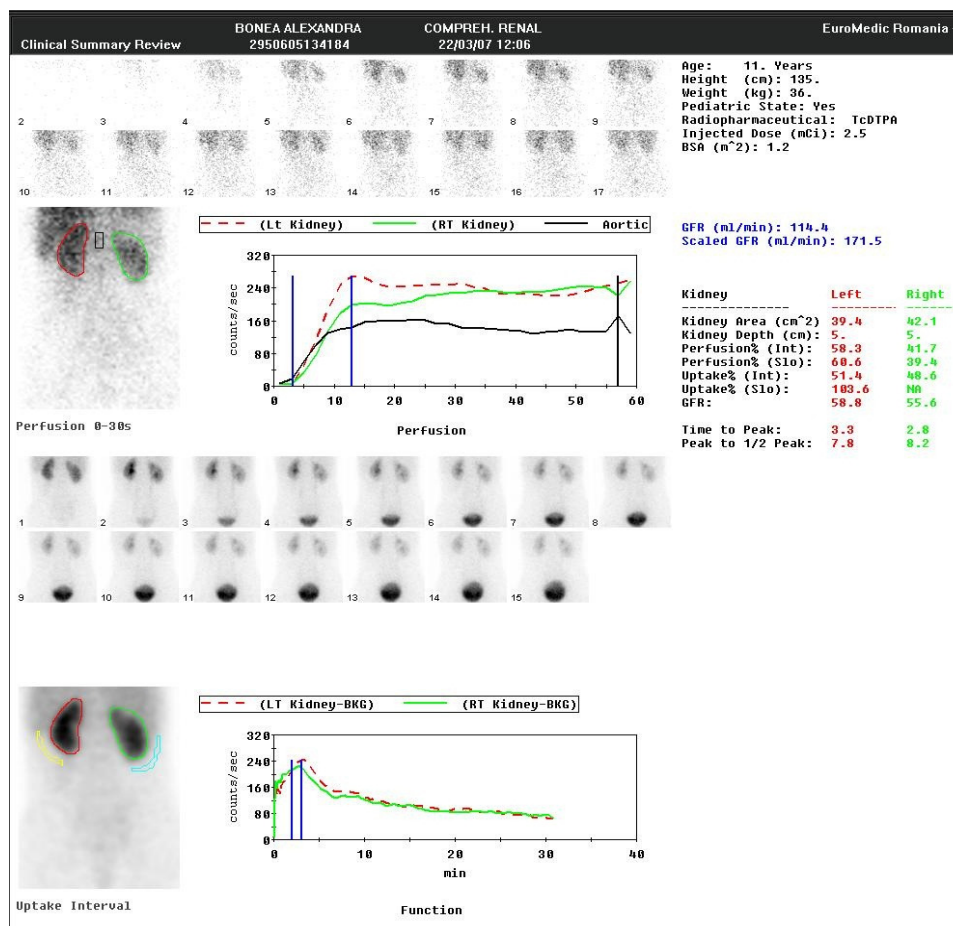


Fig. 3. Renal scintigraphy with TcDTPA, Collection Pediatric Surgery Clinic Constanta.

After the diagnosis had been set, that is, urinary tract infection present, the anamnesis was detailed, knowing the history of febrile episodes without setting definite etiology

The correct treatment of urinary tract infection was set, with intravenous ceftriaxone 3 days, then Cefuroxime, 11 days at 12 hours, with repeated urine culture after 3 days. It became sterile.

The patient was placed in a program for prevention of recurrences of urinary infections with the following scheme: nalidixic acid, cefuroxime, trimethoprim alternating for 10 days of month, 1/3 of the dose. It has been decided to delay surgery. Eventhough with a late established diagnosis, the patient never presented herself to the followup.

Discussions

This paper presents a special case of pediatric pathology, (nephrology, urology), why? Because there hasn't been implemented a protocol to establish pediatric urinary malformations, and implicitly, of the vesicoureteral reflux.

Positive diagnosis of malformation of renourinare paths was established very late, and the child was 11 years old, though she had a weakness stature weight, for which

was not established any cause. Positive diagnosis was facilitated by performing voiding cystourethrography and static scintigraphy TcDTPA.(1)

Although the diagnosis was established very late, the short-term prognosis is good, with better renal function, but with appearance of renal scarrs which is an indirect sign for reflux nephropathy. Long-term prognosis can not be currently estimated, taking into account the literature that says that the appearance of reflux nephropathy leads to complications such as hypertension, chronic renal failure.

Recurrence prevention of urinary tract infections is important in order to prevent appearance of new renal scarrs, and therefore introducing a long term antibiotic treatment scheme to the child, one evening, 1/3 of the dose, for 6 months, with further evaluation..

Further lack of patient compliance, makes the long term prognosis worse.

Conclusions

We tried to present a case of urinary-renal malformation associated with vesicoureteral reflux, manifested by urinary tract infection, with first positive episode diagnosed at a highage.

Positive diagnosis was facilitated by laboratory investigations (urine analysis, urine culture, voiding cystourethrography, static renal scintigraphy).

An early introduction of a protocol is important for early diagnosis of vesicoureteral reflux in order to maintain a normal renal function of the future adult.

References

1. Chiriac-Babei Cătălin, Dima Bogdan Alexandru - *Importanța diagnosticului imagistic în refluxul vezicoureteral la copil*, Revista Română de Pediatrie – vol. LVIII, NR. 1, 2009, page 40-45
2. Ashcraft Keith W.: *Pediatric Surgery*. Ed. a 3-a, W.B. Saunders Company, Philadelphia, London, New York s.a., 2000, p.467
3. Bâscă Ion: *Refluxul vezico-ureteral la copil*. Editura Științifică, București, 1998, p.102-105,
4. Temiz Y, Tarcan T, Önoel FF, Alpay H. & Şimşek F – *The efficacy of Tc99m (Tc-DMSA) scintigraphy and ultrasonography in detecting renal scars in children with primary vesicoureteral reflux*. International Urology and Nephrology, Volume 38, 2006, p. 149-152
5. Darge Kassa – *Diagnosis of vesicoureteral reflux with ultrasonography*, Pediatric Nephrology, Volume 17, 2002, p. 52-60
6. Ataei Neamatollah, Madani Abbas, Habibi Reza – *Evaluation of acute pyelonephritis with DMSA scans in children presenting after the age of 5 years*. Pediatric Nephrology, Volume 20, August 2005, p. 1439-1444

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