

Successful Treatment of Congenital Hydronephrosis in an Infant Associated with Late-Onset Urinoma: A Case Report

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ABSTRACT

Urinoma associated with congenital hydronephrosis related to ureteropelvic junction obstruction is extremely rare clinical entity beyond fetal life. Prenatally detected dilatation of renal collecting system accompanied by urinoma generally is a poor prognostic factor for renal function of the affected kidney. We report a case of congenital hydronephrosis in an infant associated with late-onset urinoma successfully treated operatively. Diagnosis and management as well as review of the literature on this subject are presented.

Key words: Congenital hydronephrosis, high insertion ureter, ureteropelvic junction obstruction, urinoma

INTRODUCTION

Urinoma defined as an encapsulated collection of extravasated urine generally is a rare clinical entity. The essential factors required for urinoma formation include: Continued renal function, leaking collection system, and the presence of distal obstruction of the urinary tract.^[1-3]

The most common causes of urinoma, regardless of age, are: Renal trauma, perforation of the collecting system during endourological procedures and acute obstruction due to ureteral stones.^[1,2,4] In children, perirenal urinoma indicates the presence of congenital urinary tract obstruction, mainly posterior urethral valves (PUV), followed by hydronephrosis due to congenital ureteropelvic junction obstruction (UPJO).^[2,3,5] There is a very limited number of papers presenting urinomas associated with UPJO, especially those with the late-onset.^[2,3,6]

One can find in the literature single reports describing urinoma in an infant with non-refluxing obstructive megaureter^[7] or

pediatric urinoma not associated with obstructive uropathy, such as urinoma in a newborn with non-obstructive and non-refluxing megaureter,^[8] urinoma in neonate without detectable obstructive uropathy,^[9,10] spontaneous urinoma,^[11,12] and urinoma secondary to malignancy.^[13]

We report a case of congenital hydronephrosis in an infant associated with late-onset urinoma successfully treated operatively.

CASE REPORT

Years old boy presently 5 with prenatally diagnosed right hydronephrosis underwent at the age of 3 months operative treatment of hydronephrosis associated with perirenal urinoma. After birth progressive dilatation of the right collecting system on ultrasound (US) examinations was observed [Figure 1a-c], while dynamic scintigraphy 99 m-Tc EC showed high degree right hydronephrosis with normal secretory but impediment excretory function due to UPJO [Figure 2a-c]. US performed after radionuclide

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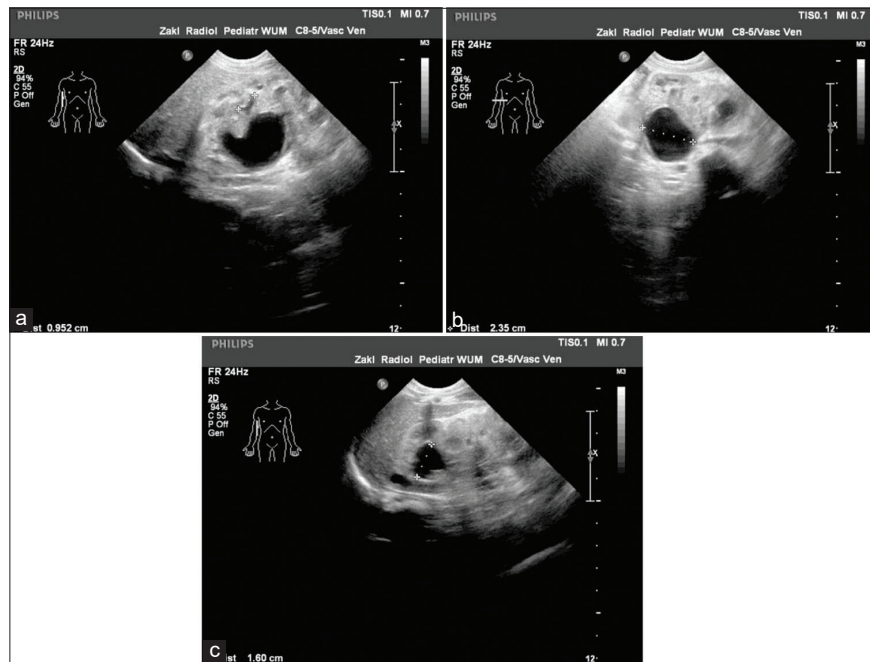


Figure 1: (a-c) Ultrasound at the age of 1 month: Dilated right pyelocalyceal system—calyces 9–10 mm, renal pelvis 25 mm in AP diameter, and narrowed renal parenchyma to 7 mm

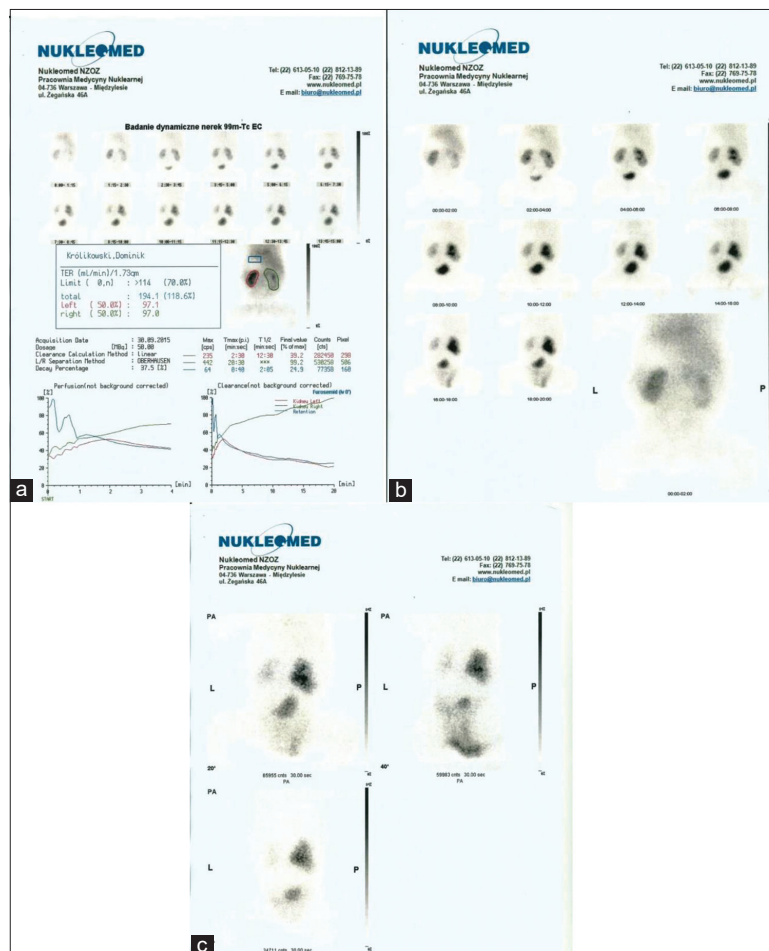


Figure 2: (a-c) Pre-operative radionuclid examination (dynamic scintigraphy): Obstructive renogram of the right hydronephrosis

examination revealed fluid accumulation over the right perirenal space with marked dilatation of renal pelvis and calyces [Figure 3a-c]. Computed tomographic urography (CTU) revealed bifid type renal pelvis, significant pielectasis, and caliectases and urinoma [Figure 4]. Extravasation of urine was confirmed on plain X-ray of the abdomen which was done after CTU [Figure 5]. An infant was operated on emergency basis—intraoperatively high insertion of the right ureter was found and dismembered Hynes-Anderson pyeloplasty was performed [Figure 6]. Double “J”stent was left as an internal drainage (introduced intraoperatively in an antegrade fashion) for 6 weeks and then removed cystoscopically. During 5-year follow-up, control US showed gradually decrease of the right collecting system with finally no dilatation noted [Figure 7], radionuclide examination permanent improvement of drainage with finally normal, and non-obstructive renogram [Figure 8a-c].

DISCUSSION

The mechanism of urine extravasation associated with congenital urinary tract obstruction includes an elevated intrarenal pressure together with thinning of the renal parenchyma, both secondary to the obstruction. It is estimated that initially urinoma formation protects kidney from increased pressure within the urinary tract above the site of obstruction, but progressive and prolonged encapsulated urinary leakage usually alter renal function.^[2,3,5]

Urinoma detected prenatally almost always indicates the presence of severe urinary tract obstruction, mainly PUV (in more than 70% of cases) or UPJO. Fetal urinomas, especially those with very early-onset, are associated with a severe impairment of renal function, that is, minimal or no function of the affected kidney. Ipsilateral nonfunctioning kidney is

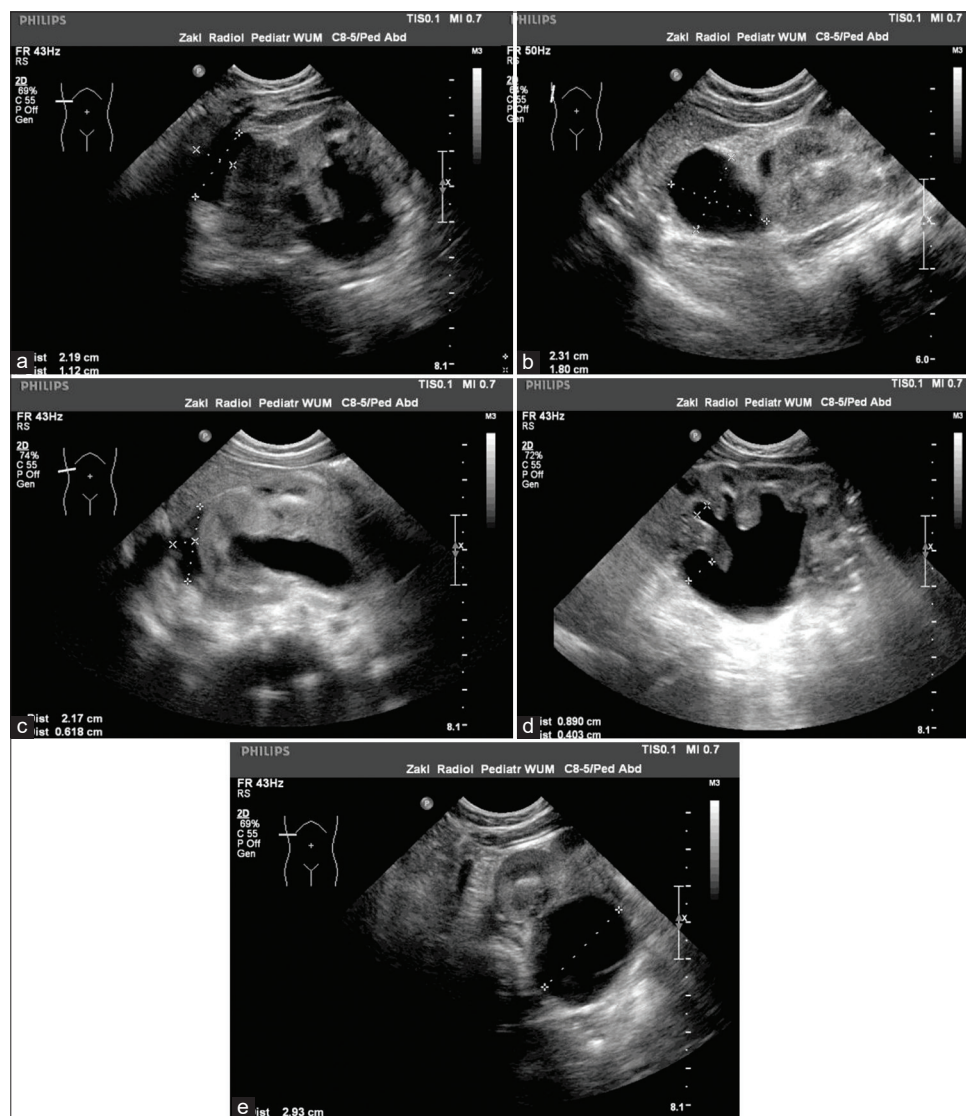


Figure 3: (a-e) Ultrasound after dynamic scintigraphy: fluid collection around the right kidney (22 mm × 11 mm × 27 mm), grossly dilated collecting system

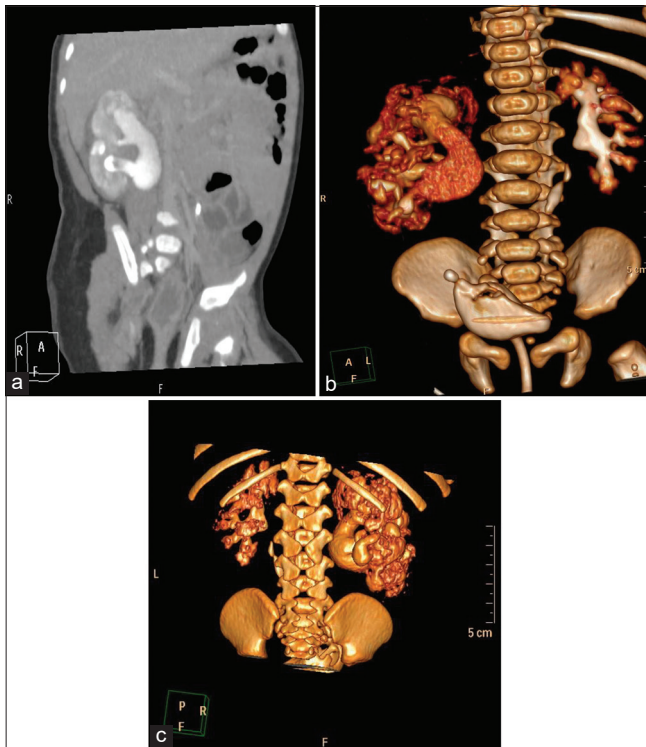


Figure 4: (a-c) Computed tomographic urography: Grossly dilated bifid type right renal pelvis and calyces–right ureter not visible, within the middle part of the kidney possible site of urinary extravasation

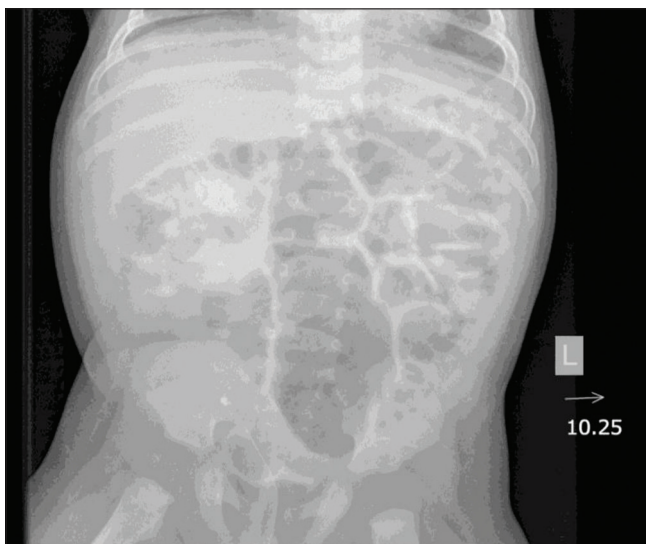


Figure 5: Plain X-ray of the abdomen after computed tomographic urography: Contrast medium (urine) extravasation around the right kidney

reported to be found in more than 80% cases of antenatally diagnosed urinomas.^[5,14,15]

Prenatal urinoma related to UPJO generally is associated with poor functional prognosis of the affected kidney.^[2,16-18] Charcos

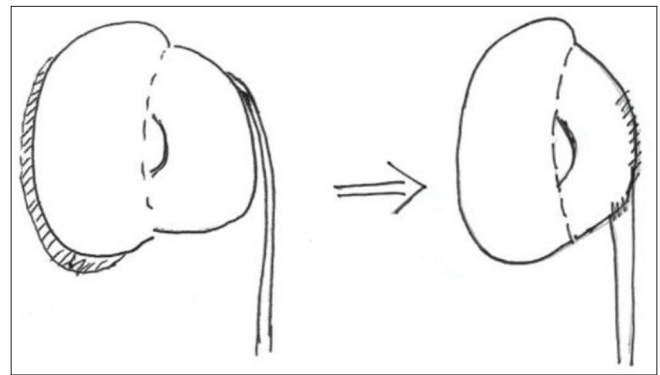


Figure 6: Schematic drawing of intraoperative findings: High insertion of the right ureter; spatulated ureter widely anastomosed with the lower pole of the renal pelvis



Figure 7: Ultrasound 5-years post-operatively: No dilatation of the right collecting system

et al. collected from the literature from 1985 to 2013, 26 cases (including one own) of prenatal diagnosis of urinoma and UPJO – in almost all of them excluding one – minimal or no function of the kidney was found after birth.^[2] The next 7 cases were published by Adorisio *et al.* in 2011,^[15] six by Oktar *et al.* in 2013^[18] and nine by Yitta *et al.* in 2014^[14] – also in those cases minimal or no function of the ipsilateral kidney with UPJO and urinoma were noted in surviving patients. In contrast, only two cases of late-onset urinoma secondary to UPJO were published. Both were symptomatic due to rupture of renal parenchyma–first in a 3-year-old boy^[6] and second in 10-year-old boy.^[3] Both were managed by pyeloplasty, one with proceeding percutaneous nephrostomy.

In our patient with congenital hydronephrosis diagnosed prenatally, urinoma was detected at the age of 3 months – no fluid accumulation was visible on previous US scans. Despite the fact that UPJO is the most common obstructive lesion of the upper urinary tract in children,^[19] various anatomic possibilities of pelviureteric obstruction can exist: UPJ

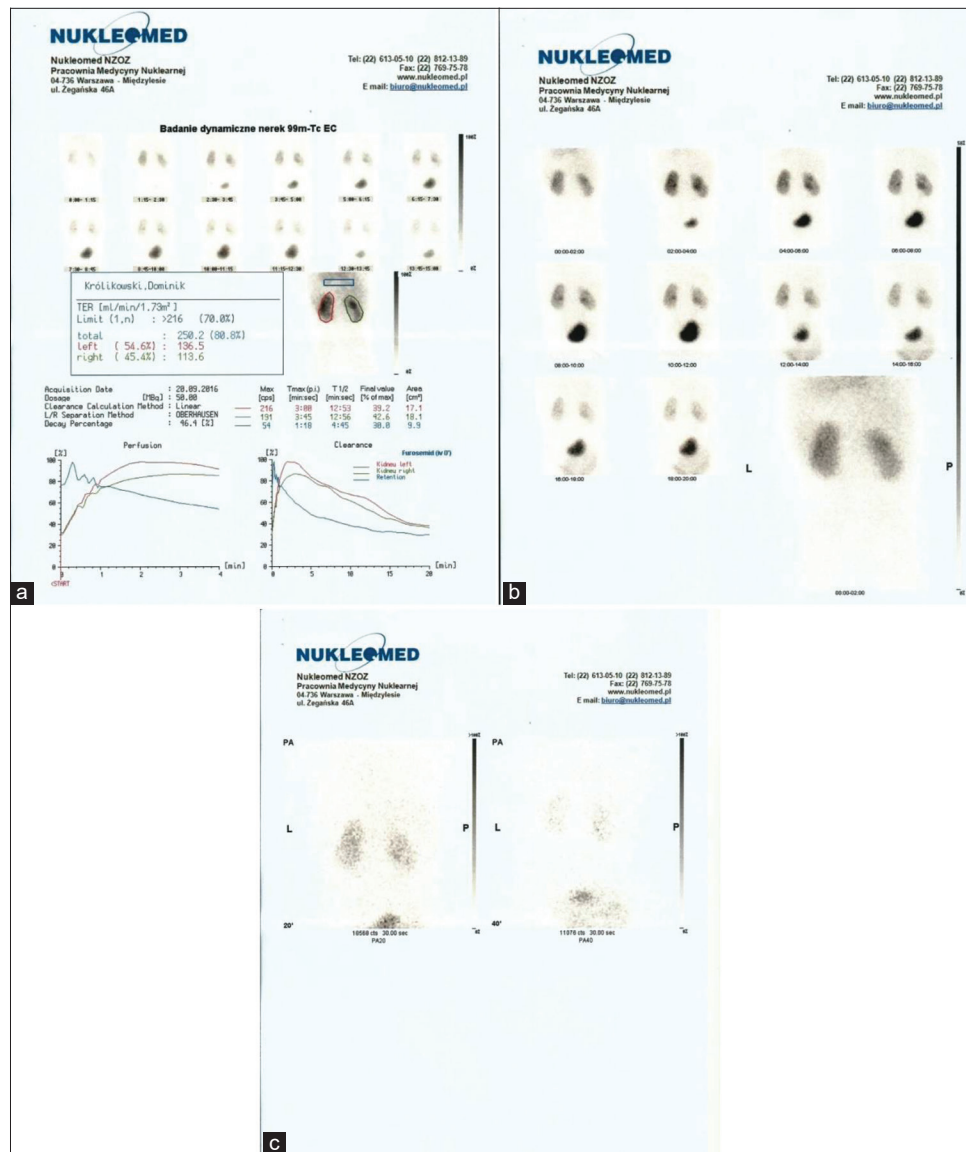


Figure 8: (a-c) Radionuclid examination (dynamic scintigraphy) 5 years post-operatively: normal secretory and excretory right kidney function—only slightly dilated renal pelvis with good excretion

stenosis (as the most common), persistent fetal structure of UPJ, hypoplastic proximal ureter, ureteral high insertion also described as raised UPJ, lower pole crossing vessels, and wide isthmus in hydronephrosis in horseshoe kidney.^[20] Probably in presented case the anatomy of pelviureteric junction as a high insertion of the ureter into the pelvis together with bifid renal pelvis played a role in late-onset of urinary extravastion as a consequence of gradually progression of disturbing emptying of the renal collecting system.

CONCLUSION

Urinoma associated with congenital hydronephrosis related to UPJO is extremely rare clinical entity beyond fetal life. Results of treatment in such cases are much more favorable as compared with prenatally detected

urinoma associated with UPJO regarding the function of the ipsilateral kidney.

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