Newborn with kidney dysplasia and ectopic ureter draining in seminal vesicle

Clinical History:

3-month-old boy with prenatally detected multicystic dysplastic right kidney underwent ultrasound follow-up.

Imaging Findings:

Trans-abdominal ultrasound images confirmed multiple cysts of variable size occupying the right kidney in association with hyper-echogenic parenchyma [Fig.1a]. Ultrasound showed an incidental hypo-anechoic tubular complex mass behind the bladder [Fig.1b] that was suspected to be a lymphangioma. The boy underwent abdominal MR during spontaneous sleeping. MRI demonstrated cystic dysplasia of the right kidney [Fig.2a], a tortuous and ectatic right ureter [Fig.2b] and the connection between the ectopic ureter and the right seminal via, which was dilated [Fig.3a, b, c]. These findings suggested the diagnosis of ectopic ureter draining into dilated seminal vesicle associated with ipsilateral cystic dysplasia of the kidney.

Discussion:

Background:

Ectopic ureter draining into seminal vesicle is a very rare congenital anomaly, which is thought to be caused by ectopic ureteral bud arising on the mesonephric duct. Seminal vesicle anomalies often occur concurrently with renal and vasal defects [1]. The distal part of the mesonephric duct is divided into three parts: the proximal vas precursor, the ureteral budding zone, and the common mesonephric duct. The ureteral bud appears at 29 days of fetal life and its origin on the ureteral budding zone determines the position of the ureteral orifice. Ectopic opening in mesonephric duct remnants occurs if the ureteral bud arises in a more cephalic position off the mesonephric duct because of a delayed absorption of the caudal mesonephric duct. Renal dysplasia can be explained as a result of the anomalous ureteral configuration [2].

Clinical Perspective:

The diagnosis of seminal vesicle anomalies is often delayed or missed because of both the rarity of these disorders and the wide spectrum of potentially confusing imaging findings they can produce. Male patients will be continent as
the ectopic ureter drains proximal to the external sphincter.
If the ectopic ureter drains into Wolffian duct structures, male patients are predisposed for epididymitis.
However, in most cases the history and physical examination are non-specific for diagnosing this anomaly [3-4]

Imaging Perspective:
Several imaging methods can be used to evaluate and differentiate this rare anomaly.
Ultrasound can demonstrate a pelvic mass with a cystic nature, dilatation of the ipsilateral ureter and, if present, associated renal abnormalities such as dysplasia, abnormal excretory system, or parenchymal loss.
Multiplanar reformatted spiral CT could be beneficial for accurate display of the anatomical relation of the structures but it requires contrast medium injection and multiphase examination with high radiation exposure [5]
MRI is a better tool for accurately defining anatomic relationships and differential diagnosis even in very young infants. MRI can accurately show both renal and seminal vesicle anomalies and it may depict the opening of the ectopic ureter because of its superior tissue contrast and multiplanar capabilities, even without the need of intravenous contrast medium injection [6]
MRI is a safe and useful examination because it can be performed without sedation ("feed and wrap" during sleeping), intravenous contrast medium injection and radiation exposure.

Differential Diagnosis List: Ectopic ureter draining into dilated seminal vesicle associated with ipsilateral cystic dysplasia of the kidney, Pelvic lymphangioma, Tortuous pelvic ureter

Final Diagnosis: Ectopic ureter draining into dilated seminal vesicle associated with ipsilateral cystic dysplasia of the kidney

References:
Description: Coronal T2W FS MR image confirms cystic dysplasia of the right kidney (arrows)

Origin:
Borzani IM, Department of Radiology, Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico, Milan, Italy
Description: Sagittal T2W MR image shows tortuous and ectatic right ureter (arrows) 

Origin: 
Borzani IM, Department of Radiology, Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico, Milan, Italy
**Figure 2**

*a* Description: Axial STIR image shows the right ureter (caliper) draining into a dilated seminal vesicle (arrows)  
*Origin:* Borzani IM, Department of Radiology, Findazione IRCCS Ca’ Granda - Ospedale Maggiore Policlinico, Milan, Italy

*b* Description: Axial STIR image shows the communication between the terminal end of the ectopic ureter and the seminal vesicle (arrow)  
*Origin:* Borzani IM, Department of Radiology, Findazione IRCCS Ca’ Granda - Ospedale Maggiore Policlinico, Milan, Italy
Description: Sagittal STIR image shows the terminal end of the right ectopic ureter draining into a dilated seminal vesicle (arrow) 

Origin: Borzani IM, Department of Radiology, Findazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico, Milan, Italy
Figure 3

a

**Description:** Transabdominal ultrasound image shows the right kidney with multiple cysts and hyperhechoic parenchyma. **Origin:** Borzani IM, Department of Radiology, Fondazione IRCCS Ca’ Granda, Milan, Italy

b

**Description:** Transabdominal ultrasound image of the pelvis demonstrates a hypo-anechoic mass behind the bladder (arrows). **Origin:** Borzani IM, Department of Radiology, Fondazione IRCCS Ca’ Granda, Milan, Italy