D

Duplicated Collecting System

- It is one of the most common congenital renal tract abnormalities, characterized by incomplete fusion of the upper and lower pole moieties resulting in complete or incomplete duplication of the collecting system.
- Duplication can be variable: At one end of the spectrum, there is merely duplication of the renal pelvis, draining via a single ureter. At the other extreme, two separate collecting systems drain independently into the bladder or ectopically. Duplex systems may be unilateral or bilateral and can be associated with a variety of other congenital abnormalities of the urinary tract, e.g., ureterocele.
- Most duplicated systems are asymptomatic and diagnosed incidentally. However, where symptoms do occur (infection, reflux, or obstruction), the patient is likely to have completely duplicated ureters. Occasionally, hydronephrosis can be severe enough to result in flank discomfort or even a palpable mass.
- MRI urography may be used as the primary diagnostic method for assessing a duplex ectopic ureter, as well as the

V. Panebianco, J.J. Fütterer, *MDCT and MRI in Genitourinary Imaging*, A-Z Notes in Radiological Practice and Reporting,
DOI 10.1007/978-88-470-5705-0_4, © Springer-Verlag Italia 2015

complications associated with duplex kidneys. Spatial resolution is a limiting factor. MR urography is an extremely useful technique in patients who have the probability of an adverse reaction to radiopaque contrast media.

- CT is able to delineate all these abnormalities, especially when performed during the excretory phase. Maximum intensity projection (MIP) reconstruction software can produce single images of the collecting systems. In an unobstructed system, the diagnosis can be difficult. A duplicated renal collecting system can be suspected by identifying the so-called faceless kidney.

Dilating Uropathy

- Dilated collecting and draining system (ureter, renal pelvis, calyxes): Any condition of the urinary tract that causes or is associated with dilatation of the urinary system. Note that dilatation does not equal to obstruction; obstruction may be one cause for dilatation; other reasons for a dilated urinary tract are laxity, dysplasia, infection, or congenital variations such as megacalicosis.

Dynamic Contrast-Enhanced MR Imaging

- Dynamic contrast-enhanced MR imaging is performed after the administration of intravenous contrast medium to access vascular characteristics of tumors and normal tissues. T1 shortening from contrast agent is considered a measure of tissue perfusion, capillary permeability, and volume of extracellular space.

Suggested Reading

1. Khan AN, Chandramohan M, MacDonald S. 2013. Duplicated Collecting System Imaging. Chief Editor: Eugene C Lin, Sumaira.
2. Croitoru S, Gross M, Barmeir E. 2007. Duplicated ectopic ureter with vaginal insertion: 3D CT urography with i.v. and percutaneous contrast administration. AJR Am J Roentgenol;189 (5): W272-4.
3. Tischkowitz MD, Hodgson SV. 2003. Fanconi anaemia. J. Med. Genet;40 (1): 1–10.
4. Gay SB, Armistead JP, Weber ME et-al. 1991. Left infrarenal region: anatomic variants, pathologic conditions, and diagnostic pitfalls. Radiographics;11 (4): 549–70.