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Case report

Complete Renal Duplication with Dysplastic Lower Moiety: A Case Report

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HIGHLIGHTS

- Ureter duplication is a common anomaly of the urinary tract in which both ureters drain one kidney.
- Here we report a rare case of renal duplication in which the lower moiety is dysplastic.
- Radiologists and urologists should always be aware because if the lower moiety is obstructive.

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ABSTRACT

Introduction

Ureter duplication is a common anomaly of the urinary tract in which both ureters drain one kidney. In bipolar renal duplication, the Meyer-Weigert-Rule describes the duplex ureters draining pattern. Owing to obstruction, the upper pole is usually seen as dysplastic, while the lower pole is associated with vesicoureteral reflux.

Case presentation

Herein, we report a rare case of renal duplication in which the lower moiety is dysplastic. A 30-year-old woman with a right single kidney with atrophic and dysfunction without secretions.

Conclusions

Radiologists and urologists should always be aware because if the lower moiety is obstructive, this newly implemented variation can require individualized care.

Keywords: Renal Duplication; Meyer-Weigert-Rule; Dysplastic Kidney

Introduction

Upper urinary tract duplication is one of the uncommon congenital urological conditions. The diagnosis of duplex kidneys accidentally happens through prenatal sonograms or during other medical evaluations (1). The pattern of ureteral drainage is usually governed by the Meyer-Weigert law, which predicts that the upper ureter drains inferomedial into an ectopic place, which usually results in obstruction. The lower ureter part usually drains superolateral to its normal insertion in the trigon.

As a result of the lack of adequate submucosal tunnel vesicoureteral reflux, pyelonephritis, and scarring making a "drooping lily" pattern on intravenous pyelograms (IVPs) can be seen (1, 2). The development of two ureteral buds is the cause of the duplicated upper urinary tract. Carl Weigert (1877) and Robert Meyer (1946) discovered the typical relationship between the upper and lower moieties and their ureters. The ureters and the ureteral orifices achieve a 180-degree clockwise rotation (of their longitudinal axis) during their embryological

development. The proximal bud draining the upper system, becomes below the first bud and in this way, the two ureters cross each other which is called “Meyer-Weigert-Rule” (3). Here, we aim to report an unusual case, in which the lower moiety was obstructive instead of link with vesicoureteral reflux (as the Meyer-Weigert rule requires).

Case Presentation

A 30-year-old woman with a right single kidney was admitted to the Sina hospital due to right flank pain lasting for 3 months. Her left kidney was atrophic and dysfunctional without secretions on a contrast computed tomography (CT) scan (Figure 1). In laboratory evaluations, normal urine analysis and normal levels of white blood cells, hemoglobin, creatinine, and urea were identified.

According to clinical and radiological findings the patient underwent surgery and surgical excision was carried out with a right flank incision, and then fascia was opened. At the lower pole of the kidney, a cystic lesion with many areas of calcification was seen and released. A dilated ureter draining the cystic lower moiety was explored. The other non-dilated ureter was draining the upper part of the kidney. Then, the lower moiety was carefully excised from the upper part of the kidney and removed along with the attached ureter. The lower moiety was full-filled with thick purulent fluid. After the homeostasis was achieved the surgical site was irrigated with gentamicin serum and a silicone pezzet drain was placed.

During hospitalization, the patient had a 38°C degree of fever. The patient's drain had an output of about 50cc/h

change significantly after the removal of the lower pole. The patient was discharged four days after the operation. The pathology report was suggestive of chronic inflammation and calcification.

Discussion

The pyelocaliceal systems duplication is a common anomaly of the urinary tract in which two ureters drain one kidney. In this report, the case had right renal duplication, but interestingly, the lower moiety was cystic. A small number of exceptions to the Meyer-Weigert rule have been published that deal with a more caudal insertion of the ureter of the lower renal pole (4-6). So, the rule may have some exceptions and it should be considered in some circumstances. For instance, while trying to find ureteral orifice in cases of upper pole ureteral stone in the duplicated pelvicalyceal system, the orifice location may not be governed by the Meyer-Weigert rule.

Conclusions

While the Meyer-Weigert rule applies to most cases of renal duplication, there are exceptions to this rule in some case reports, with particular emphasis on the lower moiety. Radiologists and urologists should always be aware because if the lower moiety is obstructive, this newly implemented variation can require individualized care.

Authors' contributions

All authors contributed equally.

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Figure 1. Right lower moiety dysplasia and left non-functional kidney on contrast CT scan

so it was removed after three days. The patient had mild hematuria for about 24 hours. Serum creatinine did not

Conflict of interest

All authors declared that there are no conflicts of interest regarding the publication of this manuscript.

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Ethical statement

The manuscript is based on the CARE guidelines and informed consent was signed by the patient.

Data availability

Data will be provided by the corresponding author on request.

Abbreviations

CT Computed tomography

IVP Intravenous pyelogram

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