Case Report

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Ureteral Triplication, Occasionally an Isolated Anomaly

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Key Words

Ureter

Ureteric triplication

Ureteric development

Abstract

A case of isolated ureteral triplication is presented, the patient did not have any other urogenital anomaly. This presentation is rare and relevant literature is discussed.

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Introduction

Triplication of the ureter is rare, with under a 100 cases reported. Like duplication, triplication may be classified according to the ureteric anatomy; and four types have been described, by Smith [1]. (1) Complete triplication: where 3 ureters from the kidney drain separately into the bladder or ectopically. This is the commonest type making up 35% of all triplications. (2) Double ureter with 1 bifid: when there are 3 ureters from the kidney and 2 join draining into 2 ureteric orifices. This accounts for 21 % of triplications. (3) Trifid ureters: when the 3 ureters join into a single orifice. 31% of triplications are type 3. (4) Double ureters from the kidney, with 1 bifurcating as an inverted Y draining into 3 orifices.

We report a case of type 2 ureteral triplication with no other congenital anomaly. Less than 25 such cases have been reported in the literature.

Fig. 1. An IVU showing a triplicated ureter with the lower two joining and crossing over the third to open separately into the bladder.

Case Report

A 62-year-old female was admitted as an emergency with a 6-hour history of right renal colic. There was no abnormality on examination and urine analysis was negative with no microscopic haematuria. She had 2 children, both normal vaginal deliveries.

An intravenous urogram (IVU) showed a normal collecting system on the right and a type 2 ureteral triplication on the left. The triple ureter draining from the kidney opened into 2 ureteric orifices at the trigone, with the lower 2 joining at the level of L3 (fig. 1). The patient's symptoms settled on conservative management, and she has remained asymptomatic on out-patient follow-up.

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Our patient with an isolated congenital ureteric triplication did not have any other associated genito-urinary abnormality and has been asymptomatic all her life. No treatment is necessary and none has been offered. A flexible cystoscopy done at a later date confirmed 2 ureteric orifices on the left.

Discussion

Ureteral triplication is a rare congenital anomaly usually associated with other inborn defects. Triple ureters may be responsible for recurrent urinary infections, incontinence or pain but often this anomaly is asymptomatic, being detected during investigation of other congenital abnormalities. Ureteral duplication in the contralateral ureter represents the most common anomaly associated with triplication (37%). Ureteral ectopia (28%) and renal dysplasia (8%) are other common associations [2]. Occasionally ureterocoele or vesico-ureteric reflux, and rarely syndactyly, angiomas, or malformation of the sex organs may be present. The case we present did not have any other associated congenital anomaly.

Normally the ureter arises as a metanephric diverticulum (ureteric bud) in the 4-week embryo from the Wolffian duct. The ureteric bud grows dorsally and cranially and the dilated distal end differentiates into the renal pelvis and the major and minor calyces during the 6th to 8th weeks. Ureteric duplication and triplication have been explained by multiple ureteric buds arising independently from the Wolffian duct, and/or early fusion of 1 or more ureteral buds. Most cases of ureteral duplication conform to the Weigert-Meyer law [3], which states that the ureter from the upper pole of the kidney is incorporated into the bladder or the distal derivatives of the Wolffian duct more caudally and medially than the lower pole ureter. However this law does not hold for a large percentage of patients with ureteral triplication. This lack of conformity has been postulated by Ireland and Chute [4] as being due to early splitting of a single ureteric bud. From the IVU in our case the anatomical arrangements of the ureter can be discerned and the 2 ureteric orifices opening into the trigone on the left conform to Weigert-Meyer's law.

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