
CASE REPORT

Diagnosing Retrocaval Ureter by Spiral Computed Tomography Urography

KM Savi de Tové¹, SA Allodé², A Hodonou², P Yèkpè³, O Biaou³, V Boco³

¹Department of Imaging Diagnosis, and ²Department of Surgery, Medicine School of Parakou University, Benin

³Department of Imaging Diagnosis, Medicine School of Abomey-Calavi University, Benin

ABSTRACT

Retrocaval ureter is a rare congenital abnormality resulting in the ureter passing dorsal to and being obstructed by the inferior vena cava. Its symptom is non-specific, and urography is the key to diagnosis. We report one such case diagnosed by spiral computed tomography urography.

Key Words: Retrocaval ureter; Tomography, spiral computed; Urography

中文摘要

螺旋CT尿路造影診斷下腔靜脈後輸尿管

KM Savi de Tove, SA Allode, A Hodonou, P Yekpe, O Biaou, V Boco

下腔靜脈後輸尿管是一種罕見的先天性異常，導致輸尿管向背部通過並被下腔靜脈阻塞。其症狀是非特異性的，尿路造影是診斷的關鍵。本文報告一例螺旋CT尿路造影診斷病例。

INTRODUCTION

Retrocaval ureter is a rare congenital abnormality resulting in the ureter passing dorsal to and being obstructed by the inferior vena cava. Its symptom is non-specific, and urography is the key to diagnosis. It may cause hydronephrosis and hence low back pain. Its treatment comprises uncrossing and end-to-end anastomosis of the ureter.^{1,2}

CASE REPORT

In June 2012, a 38-year-old woman presented with a history of chronic right low back pain. A urine dipstick test showed microscopic haematuria. Blood tests were normal, with serum creatinine level within normal range. Ultrasonography revealed right hydronephrosis with the right upper ureter dilated without obstacle. The

renal cortex was of normal thickness. Spiral computed tomography urography confirmed hydronephrosis and dilatation of the right ureter secondary to type-1 retrocaval ureter (Figure). The patient underwent uncrossing and end-to-end anastomosis of the ureter.

DISCUSSION

About 400 cases of retrocaval ureter have been reported.³ This embryologic development anomaly is due to the posterior cardinal vein pushing the ureter to the medial and dorsal direction in relation to inferior vena cava; about 20% of cases associated with other anomalies.⁴ Retrocaval ureter occurs three to five times more frequent in men than in women.^{1,2} Its symptom is mainly associated with hydronephrosis,^{5,6} and hence low back pain. Other symptoms resemble complications of

*Correspondence: Dr KM Savi de Tove, P.O. Box 02, Borgou, Benin.
Email: savitoveto@yahoo.fr*

Submitted: 28 Apr 2015; Accepted: 5 Oct 2015.

Disclosure of Conflicts of Interest: All authors have disclosed no conflicts of interest.



Figure. Computed tomography urography showing (a) ureteral hydronephrosis with the ureter behind the inferior vena cava (arrow), (b) hydronephrosis and dilatation of proximal portion of ureter (arrowhead), and transition of the ureter from the retrocava to spiroid (arrow), and (c) the reverse 'J' appearance of the ureter (arrowhead).

lithiasis and haematuria infection.^{1,2}

Retrocaval ureter is classified into two types based on radiologic appearance and base of ureteral narrowing. In type 1, which is the most common, the course of ureter is normal until L3 level where it bifurcates and courses as a reverse 'J'. The ureter then passes behind the inferior vena cava, bypasses it, and appears on its medial edge moving towards the previous position in relation to the right iliac artery and then passes in an orthotropic manner into the bladder. In type 2, the positions of ureteric pelvis and initial ureteral segment are almost horizontal. The base of medial ureteral deviation is more proximal than in type 1. The ureter rides behind the inferior vena cava in the form of a sickle. Pyelocaliceal system and ureter dilatation are less remarkable.

Traditionally, diagnosis of retrocaval ureter is based on intravenous urography and cavography.⁶ Multiplanar reconstruction of spiral computed tomography enables more efficient diagnosis.^{7,8} Acquisition in a spiroid mode with multislice technology provides a more accurate analysis of the ureter course by reducing the partial volume artefacts, slice thickness, and scanning time. Sagittal and coronal reconstruction, after intravenous injection of contrast agent at the excretion phase, enables association of symptoms with the anomaly. Three-dimensional reconstruction facilitates representation of retrocaval ureter while avoiding its overlapping with adjacent structures. Surgical treatment is recommended because of its impact on the obstructed urinary tract and renal parenchyma.^{1,2,7}

REFERENCES

1. Kenawi MM, Williams DI. Circumcaval ureter: a report of four cases in children with a review of the literature and a new classification. *Br J Urol.* 1976;48:183-92. [cross ref](#)
2. Hadzi-Djokic J, Basic D, Dzamic Z, Aćimović M, Markovic Z. Retrocaval ureter based on a series of 16 cases [in French]. *Prog Urol.* 2009;19:33-8. [cross ref](#)
3. López González PA, López Cubillana P, Server Pastor G, Girón Vallejo O, Ruíz Pruneda R, Doñate Iñiguez G, et al. Retrocaval ureter in children. Case report and bibliographic review. *Arch Esp Urol.* 2011;64:461-4.
4. Perimenis P, Gyftopoulos K, Athanasopoulos A, Pastromas V, Barbaliás G. Retrocaval ureter and associated abnormalities. *Int Urol Nephrol.* 2002;33:19-22. [cross ref](#)
5. Tegegne A, Cobas C. Retrocaval ureter with ureterohydronephrosis. *East Cent Afr J Surg.* 2009;14:119-21.
6. Primus G, Kopp W. Retrocaval ureter--a rare anomaly. *Int Urol Nephrol.* 1986;18:277-82. [cross ref](#)
7. Yong Y, Yi H, Gang J. A retrocaval ureter. *Lancet.* 2010;375:1029. [cross ref](#)
8. Lin HY, Chou YH, Huang SP, Li YC, Tsai HN, Jeng HS, et al. Retrocaval ureter: report of two case and literature review. *Kaohsiung J Med Sci.* 2003;19:127-31. [cross ref](#)