Incidental finding of retrocaval ureter in a patient without hydronephrosis

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Abstract: Retrocaval or circuncaval ureters are rare congenital anomaly, in which the ureter is located posterior to the inferior vena cava (IVC). Usually, patients present symptoms in the 3rd or 4th decade of life due to compression of the ureter by the IVC, with obstruction of the urinary flow and consequent hydronephrosis. Herein we report the case of a 62-year-old patient who underwent ultrasonography to investigate abdominal pain. The patient had bilateral renal lithiasis associated with urinary tract dilation with no obvious obstruction. Computed tomography of the abdomen demonstrated a retrocaval ureter without hydronephrosis.

Keywords: Diagnosis; hydronephrosis; retrocaval ureter

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Introduction

First described in 1893 by Hoechstetter, the retrocaval ureter is a rare congenital entity resulting from an abnormal development of the inferior vena cava (IVC). It occurs in about 1:1,000 of live births and has a predominance of 3:1 males to females (1). Some authors also use the term pre-ureteral vena cava, due to its embryological origin. The ureter passes behind the IVC and then crosses in front from its medial to lateral border, thereafter maintaining its usual course to the bladder. It usually involves the right ureter, unless it is associated with *situs inversus* or duplication of the IVC (2).

Case presentation

We report the case of a female patient with dyslipidemia and a history of tubal ligation 30 years previously. At age 50, she was submitted to abdominal ultrasonography to investigate right lower back pain that identified bilateral renal lithiasis and she continued her follow-up at her local outpatient clinic. At the age of 62, during an investigation of mild abdominal pain, mainly in the lower abdomen, bilateral renal lithiasis and urinary tract dilation were diagnosed. The patient was referred to the Urology Outpatient Clinic of Hospital de Base in São José do Rio Preto, SP, Brazil.

Abdominal computed tomography was requested, which demonstrated the presence of retrocaval ureter on the right without hydronephrosis or any other associated alterations (*Figure 1*). As the patient was asymptomatic, the chosen conduct was outpatient monitoring.

Discussion

The first description of a retrocaval ureter was made by Hochstetter in 1893. Initially, it was thought to be an anomaly of ureteral development. However, advances in embryology studies have shown that it is abnormal development of the IVC. Postulated by Shulman in 1997, the most accepted theory today suggests the persistence

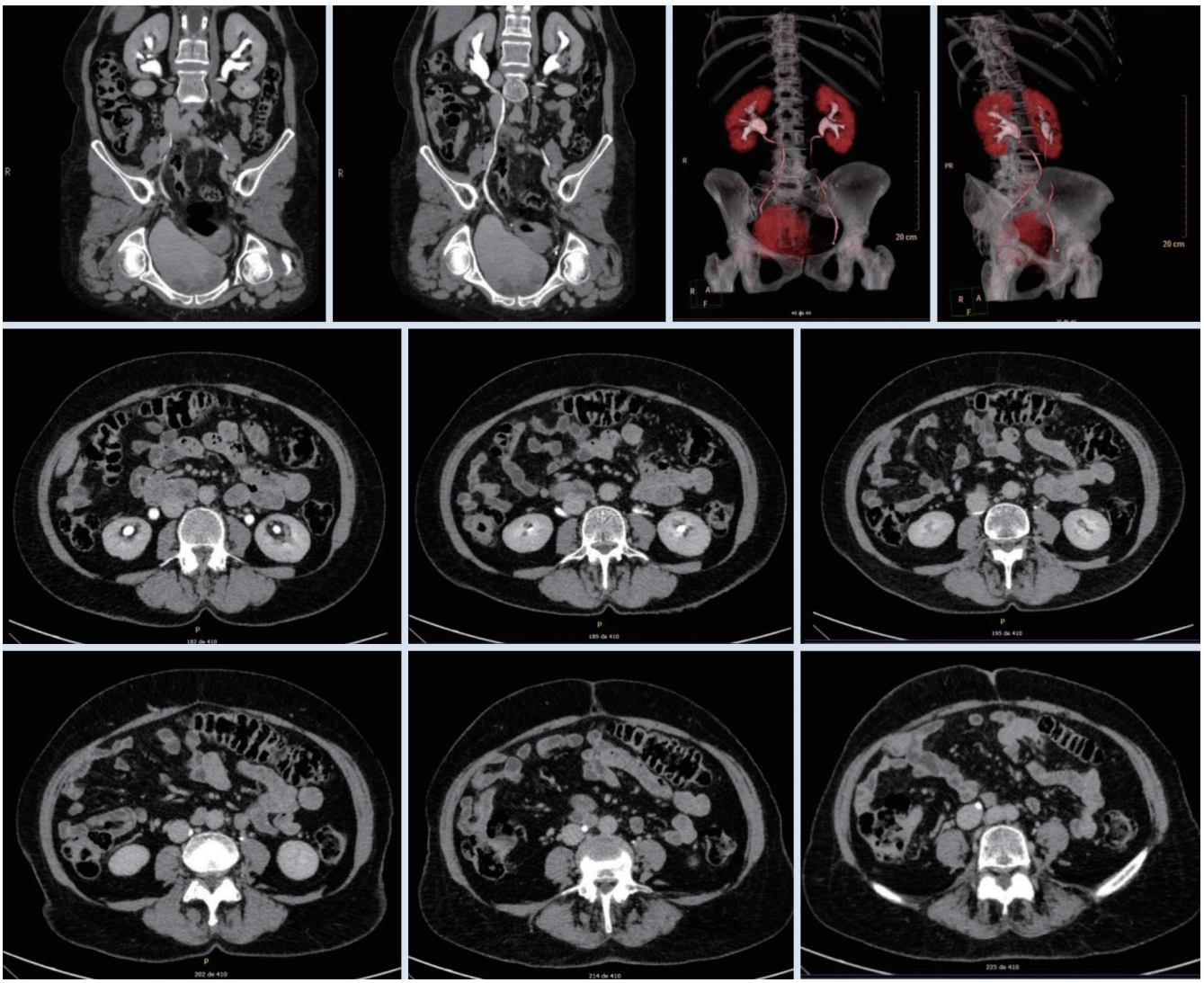

Figure 1 Computed tomography images demonstrating the right ureter circling the IVC with its distal portion following the expected route to the bladder. IVC, inferior vena cava.

of the subcardinal vein (which regresses during normal development) as the IVC, crossing the middle portion of the ureter thereby placing it in a retrocaval position. Other authors suggest the persistence of the posterior cardinal veins as the inferior cava vein. In both theories, failure of the development of the supracardial vein as the infra-renal IVC is common sense (1,3).

Patients generally present symptoms in the third or fourth decade of life, especially symptoms related to ureteral obstruction and hydronephrosis, such as right flank pain, repetitive urinary infections and nephrolithiasis; patients may complain of hematuria (4). Excretory urography was a commonly used method to diagnose the circumcaval ureter, showing dilation of the renal calyces, the renal pelvis and of the proximal ureter above the obstruction. Typically, contrast may fail to fill the posterior portion of the IVC, reinforcing the diagnostic hypothesis (5). More recently, computed tomography has been considered the gold standard in the diagnosis of this pathology, since it is noninvasive and accurately determines the anatomical relationships between the ureter and the IVC, thereby helping in the differential diagnoses, especially of retroperitoneal masses that can cause extrinsic compression and of retroperitoneal fibrosis (4).

Conclusions

Similar to this case report, most cases described in the literature involve the right ureter. Only patients who are symptomatic or those who have complications related to ureteral compression should be treated surgically. However, attention should be paid during surgical procedures for other comorbidities in these patients, since anatomical variations may lead to unintentional lesions.

To date, the patient remains asymptomatic and she is monitored in the outpatient clinic.

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Informed Consent: Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

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