European Institute of Knowledge & Innovation

Annals of Innovation in Medicine (AIM) ISSN: 2977-0335

Case Report

Retrocaval Ureter Associate with Ureterolithiasis: Case Report

Bruna De Martino Mansilha Vilela[1*], Giovanna Cardoso Rodrigues[1]

1 University of Taubaté, Brazil
* Correspondence: brunammvilela@gmail.com

https://doi.org/eiki/10.59652/aim.v2i2.182

Abstract:

The retrocaval ureter is a congenital anomaly in which the ureter passes posteriorly to the inferior vena cava (IVC). This condition is rare and promotes compression of the upper segment of the ureter, leading to urological symptoms, the main one being hydronephrosis.

We present a case of the Hospital Regional do Vale do Paraíba from the year 2022 of retrocaval ureter associated with ureterolithiasis, whose endourological treatment allowed the successful treatment of urinary lithiasis safely despite the congenital anomaly presented by the patient.

Keywords: retrocaval ureter; ureterolithiasis; endourological treatment.

Introduction

The retrocaval ureter is a congenital anomaly that occurs between the 4th and 8th weeks of intrauterine development and is due to the abnormal formation of the infrarenal inferior vena cava (IVC) from the subcardinal vein located anteriorly instead of the supracardinal vein located posteriorly (1). Thus, the ureter passes posteriorly to the inferior vena cava. The prevalence of this anomaly is around 0.13%, predominates in males in relation to females (3:1), and is usually on the right side (2). Therefore, it is a rare condition and its presence should be suspected by doctors, especially in the presence of urological symptoms without a clear cause. These symptoms may manifest mainly by hydronephrosis since IVC compresses the upper segment of the ureter, leading to different degrees of this condition (3).

The association of the retrocaval ureter with calculus in the loop segment of the ureter is extremely rare (4). However, it is a condition of high social impact and high cost, considering that it affects 5% to 15% of individuals at some point in life and also has high recurrence rates (5). It affects the population in a ratio of three men to every woman, especially in the 20-50 age group. Industrialized countries with tropical climates have a higher incidence of kidney stones when compared to developing countries, a fact resulting from the differences between the type of diet and water loss due to sweat (6). In addition, ureterolithiasis consists of the presence of a kidney stone in the ureter, causing symptoms such as severe colic, nausea and vomiting and can lead to hydronephrosis, as well as cause damage to renal function.

The patient in the present clinical case presents a retrocaval ureter associated with ureterolithiasis, whose endourological treatment allowed the successful therapy of urinary lithiasis safely despite the congenital anomaly presented. Since it is a case of rare association, it is highly relevant for discussion.

Case Report

SRM, 51 years old, female, white, born and coming from Pindamonhangaba-SP, with chronic obstructive pulmonary disease, hypertension and depression. She was referred to the

Received: 20 Apr. 2024
Accepted: 28 Apr. 2024
Published: 28 Apr. 2024

Urology Department of the Hospital Regional do Vale do Paraíba (HRVP) due to right low back pain two days ago, associated with chills. Blood count and examination of abnormal elements and sediments of the urine were requested, which showed: 17,600 leukocytes per microliter of blood, positive nitrite in the urine and 975,000 leukocytes per field. Computed tomography of the abdomen was also requested, which demonstrated mild right ureteral dilation, pelvic calcifications on the left, which may correspond to phlebolites; on the right there was an image in the ureteral path that raised doubts about whether it was vascular calcification. In view of these results, it was decided to perform abdominal tomography with contrast, in order to obtain a better observation of stones.

The patient was submitted to a new computed tomography of the abdomen with contrast, which showed retrocad ureter, with mild upstream ectasia, which is justified by the anatomical alteration; middle ureter with calcification in its topography, which suggests calcification in the internal iliac artery; presence of free fluid in the pelvis in moderate amount. In view of the above result, it was decided to admit the patient, antibiotic therapy and new laboratory tests were performed. In these tests, the patient had a reduction in the leukocyte count to 8300 cells per microliter of blood.

Thus, the passage of a double J (Figure 1) catheter was performed on the right without wire, the passage of hydrophilic guide wire did not present any output of secretion of infectious aspect, however, the performance of ureteroscopy was impossible due to ureteral compliance. The patient evolved without intercurrences and was discharged from the hospital three days after surgery, and returned to the outpatient clinic two days after discharge, complaining of constant pain in the right flank, burning, associated with dysuria. As a result, a new Computed Tomography of the abdomen was performed, which did not show new ureteral stones, so it was decided to remove the double J catheter and the patient was discharged the next day.

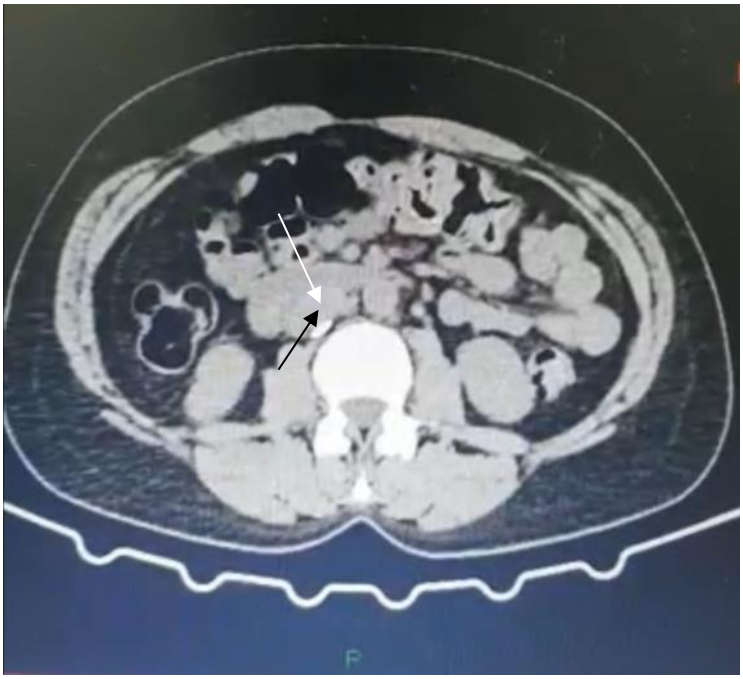

Figure 1 Tomography of the abdomen in the axial section, showing an anomalous trajectory of the right ureter. Black arrow: right ureter with double J. White arrow: right vena cava.

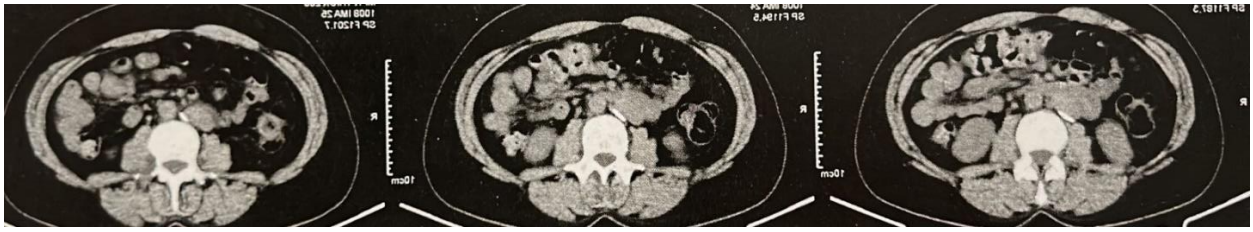

Figure 2 Tomography of the abdomen in the axial section, showing ureter with catheter passing posteriorly to the vena cava.

Discussion

The retrocava ureter is a rare condition that triggers the entrapment of a proximal segment of the ureter, resulting in the involvement of the ureter around the IVC. Although congenital, it usually becomes symptomatic in the third or fourth decade of life due to hydronephrosis by compression of the IVC-segmented ureter against the psoas muscle, ureteral torsion or an adynamic retrocaval ureteral segment. The main symptoms and complications include abdominal pain, hematuria, urinary tract infection, stone formation, and renal dysfunction[1].

In addition, it may be associated with other anomalies mainly in the urogenital organs and cardiovascular systems. Some of these include IVC duplication, situs inversus, imperforate anus, esophageal atresia, myelomeningocele, renal agenesis, shoe-wearing horse, ureteral duplication, congenital absence of deference vessels, hypospadias, intestinal malrotation, VACTERL, and Turner's branchial arch (7).

In the present clinical case, the patient reported was female and was in the fifth decade of life. She had a picture of right low back pain associated with chills, which made her seek the health service. During the investigation of the clinical picture, a urinary tract infection, ureterolithiasis and the presence of retrocava ureter were evidenced, with mild upstream ectasia; middle ureter with calcification in its topography; presence of free fluid in the pelvis in moderate amount.

In the literature, this condition was classified into two types according to the radiographic appearance and the site of ureteral narrowing. Type I, most commonly, the ureter reveals a typical "hook" shaped deformity, displaying an inverted J or S figure over the site where the obstruction is. The obstruction causes dilation of the proximal upper urinary tract at the level of the lateral face of the IVC. Type II, on the other hand, the post-cava segment of the ureter crosses higher at the level of the renal pelvis.

Treatment is based mainly on clinical presentations, degree of hydronephrosis and existence of impaired renal function. In patients without subjective symptoms and without hydronephrosis, surgical correction is not mandatory, justifying therapeutic abstention[3]. Therefore, due to the symptomatic picture presented by the patient, she was submitted to endourological treatment, obtaining success in the therapy of ureterolithiasis, despite the anomaly.

Conclusion

The retrocava ureter associated with ureterolithiasis is a rare entity. Computed tomography and magnetic resonance imaging are the best tests for investigation and diagnosis. Surgical treatment is recommended in symptomatic cases and usually leads to complete resolution. In the case reported, as the patient was symptomatic, the endourological treatment was resolutive.

References

1. Atawurah H, Maison POM, Owusu-Ansah M, Asante-Asamani A. Retrocaval Ureter: Report of Two Cases. Case Reports in Urology. 2019 Nov 3;2019:e2815748.

2. Hostiuc S, Rusu MC, Negoi I, Grigoriu M, Hostiuc M. Retrocaval ureter: a meta-analysis of prevalence. Surg Radiol Anat. 2019 Nov;41(11):1377–82.
3. Al-Hajjaj M, Aljool AA. Retrocaval ureter with ureteral calculus: Case report. Urol Case Rep. 2020 Nov;33:101288.
4. Kanojia RP, Bawa M, Handu AT, Naredi BK, Menon P, Rao KLN. Retrocaval ureter with stone in the retrocaval segment of the ureter. Pediatr Surg Int. 2010 Aug;26(8):863–5.
5. Fernandes MBM. Plano de ação para diminuição da ocorrência de litíase renal na área da Equipe de Saúde da Família Luxemburgo, no município de Sete Lagoas/ Minas Gerais. 2018 Aug 25 [cited 2024 Apr 27]; Available from: https://repositorio.ufmg.br/handle/1843/BUOS-B6XN7D
6. Sampaio FJB, Filho GDB. Litíase Renal. In: Guia prático de urologia [Internet]. Rio de Janeiro; 2000 [cited 2024 Apr 27]. p. 97–104. Available from: https://www.saudedireta.com.br/docsupload/1332082036Litiase_Renal.pdf
7. Perimenis P, Gyftopoulos K, Athanasopoulos A, Pastromas V, Barbalias G. Retrocaval ureter and associated abnormalities. In: International Urology and Nephrology. 2002. p. 19–22.