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Retrocaval ureter with ureteral calculus: Case report

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ABSTRACT

Retrocaval ureter, which also called circumcaval ureter, is a rare abnormal development where the vena cava compresses the upper segment of ureter leading to different grades of hydronephrosis. We reported a case of a 50-year-old man has a retrocaval ureter with a stone in the loop behind the vena cava. Surgical correction with extraction of the stone was done successfully. On follow up, there was no hydronephrosis. In conclusion synchronized retrocaval ureter with a stone in the ureter is considered a surgical challenge to the urologist and it needs careful investigations to make the diagnosis.

Introduction

Retrocaval ureter, also called circumcaval ureter or pre-ureteral vena cava, is a rare congenital anomaly in which the ureter passes posterior to inferior vena cava (IVC).[1] The condition is seen three times more commonly in males than in females and is usually on the right side.[2]

Hochstetter reported the first case in 1893. More than 200 cases have been reported in the literature.[3] The presence of a stone in the retrocaval ureteral loop is very rare. A few cases reported this accomplishment.

We reported a case of retrocaval ureter with a calculus in the upper hydroureteric segment.

Case presentation

A-50-year- old male came to our outpatient clinic, department of urology, Aleppo University Hospital with an intermittent right flank pain started three months ago. Past medical, familial, and psycho-social history including relevant genetic information history was unimportant otherwise a gastric ulcer treated successfully. Physical examination revealed moderate tenderness on the right lumber region with no other compliments. Laboratory findings including complete blood count, serum creatinine and urine analysis were normal. Abdominal ultrasound showed a moderate to severe right renal hydronephrosis and upper hydroureter. Left kidney was normal. A Computed Tomography (CT) scan of the abdomen and pelvis showed an 8 mm ureteral stone with right hydronephrosis (Fig. 1).

Later, the patient underwent for intravenous pyelography. IVP showed S shape of the right ureter which was retrocaval ureter (Fig. 2). After taking patient consent, he underwent to open surgery. Right lumbotomy incision was done. The upper segment of the ureter was behind the inferior vena cava.

We opened the upper segment of the ureter and extracted the stone. The ureter was transected at the level of L2 and anastomosed to the distal ureter. A double j stent was placed in the right ureter. After the surgical procedure, the patient recovered and was in good health. Five weeks later, we removed the double j stent. Laboratories and abdominal ultrasound were normal. Follow up for six months showed no hydronephrosis on ultrasound.

Discussion

Retrocaval ureter is a squeal to the mal development of the infra renal vena cava. Abnormal persistence of the right cardinal vein will result in RCU.[4] The overall incidence of retrocaval ureter is 0.07% with male to female ratio of 3:1.[5]

In the literature retrocaval ureter has been classified into two types according to the radiographic appearance and the site of ureteral narrowing.

The **Type I** is more common. The ureter is in normal position until the height and usually crosses behind the IVC at the level of the third or fourth lumbar vertebra and IV pyelography study reveals a typical “fish-hook” shaped deformity of the ureter, displaying a figure of inverted J or S over the place where is the obstruction. The ureter passes then behind the lower vena cava, bypasses her and appears on its median edge. The obstruction causes the dilation of the upper urinary tract proximal to the level of lateral side of IVC.

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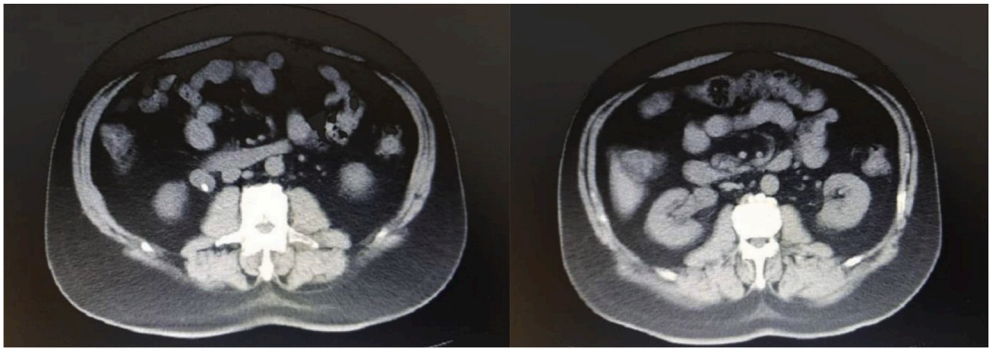

Fig. 1. Computed tomography shows right renal hydronephrosis with ureteral stone.

Fig. 2. Intravenous pyelography shows S shape sign.

The **Type II** is less common. The Post caval segment of the ureter crosses higher at the level of the renal pelvis. Various techniques for the management of retrocaval ureter have been reported. Treatment primarily is based on clinical presentations, grade of hydronephrosis and existence of impairment of renal function. In patients with no subjective symptoms and no hydronephrosis, surgical correction is not mandatory, therapeutic abstention is justified. Periodical examination has been required.[3]

Most patients present with right lumbar pain. They may have recurrent urinary tract infection or episodes of acute pyelonephritis. Occasionally calculi may form above the obstruction.[5]

Ultrasonography, antegrade and retrograde pyelography with inferior venocavography, intravenous urogram (IVU) were commonly used to diagnose circumcaval ureter. Currently, CT scan and magnetic resonance imaging (MRI) have been considered the best efficacious methods of confirming the diagnosis, least invasive with inherent ability to describe the lesion in a three-dimension mode.[3]

There are some reports that are presented in literature describing association of retrocaval ureter and renal calculi.

Treatment of the retrocaval ureter includes open or laparoscopic surgery. Fewer cases treated laparoscopic. Open surgery steal the most surgical approach used for this cases. We describe a successful removing calculus in a retrocaval ureter.

Conclusion

Retrocaval ureter with a stone is a rare entity. CT scan and MRI are the best investigations for diagnosis. Surgical treatment is recommended in symptomatic cases and it is usually leads to a complete resolution of hydronephrosis.

References

1. Okunade K. *January-March 2018 an Official Publication of the National Postgraduate Medical College of Nigeria*. 2018:19–26. January.
2. Liu E, Sun X, Guo H, et al. Retroperitoneoscopic ureteroplasty for retrocaval ureter: report of nine cases and literature review. *Scand J Urol*. 2016;50(4):319–322.
3. Scn K, Diallo Y, Jalloh M, et al. International Archives of Urology and Nephrology Retrocaval Ureter : A Rare Cause of Hydronephrosis. 2019;2(4):2–4.
4. Prakash R, Monika K. *Retrocaval Ureter with Stone in the Retrocaval Segment of the Ureter*. vols. 863–5. 2010.
5. Agarwal S, Goel S, Sankhwar S, Garg G. *Circumcaval Ureter/Retrocaval Ureter*. vols. 1–2. 2018.