



E-ISSN: 2616-3470
P-ISSN: 2616-3462
© Surgery Science
www.surgeryscience.com
2020; 4(1): 272-274
Received: 10-11-2019
Accepted: 14-12-2019

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Spontaneous retrograde migration of mid ureteric calculus into the kidney: First ever report from India

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DOI: <https://doi.org/10.33545/surgery.2020.v4.i1.e.346>

Abstract

We present a case of spontaneous retrograde migration of mid ureteric calculus into the kidney. A 55 year old male, who presented with left flank pain, was diagnosed with a left mid ureteric calculus on ultrasound abdomen. X ray KUB and CT KUB confirmed the same. Intervention was planned as he did not respond to Medical Expulsive Therapy. On day three, he developed urinary intermittency followed by pain relief. We suspected the calculus to have spontaneously passed out and an X ray KUB was done to confirm it. To our surprise, the same calculus was seen in the kidney instead of ureter. A repeat CT KUB confirmed that the calculus has up migrated into the lower calyx of the kidney.

Keywords: Spontaneous retrograde, mid ureteric calculus, kidney

Introduction

Urolithiasis is one of the most common urinary conditions encountered by an urologist with a prevalence of 1 to 20 % [1, 2] Its incidence is increasing globally [3]. Ahmad F *et al.* reported an incidence of 23.3% in Indian population [4]. Management is mainly conservative or surgical based on the size and location of the ureteric calculus. A considerable number of patients with small calculus usually experience a spontaneous expulsion. On the other hand, the upward urinary tract calculus migration has been reported only twice in the literature [5, 6] To the best of our knowledge, we report the third case of retrograde migration of the urinary tract calculus and the first to be from India.

Case report

A 55 year old male patient presented to our Department with complaints of left flank pain radiating to left groin and burning micturition for one week. There was no past history of urolithiasis. Clinical examination and laboratory investigations including complete blood count, and renal function test were normal except for presence of pus cells in urine analysis. Non contrast computerized tomography kidney ureter bladder was done which showed a single calculus of 6x5x9 mm in the left mid ureter region (HU 1200), with associated proximal hydroureteronephrosis. (Figure 1) The calculus was radio opaque on x-ray. (Figure 2) Surgical intervention was planned for the same. On Day 3 he developed urinary intermittency followed by relief from pain. Assumption of spontaneous pass out of calculus was made and an X ray KUB was done to confirm the same. But in contrary, the same calculus was noted in the kidney instead of ureter. Repeat CT confirmed a single 6x5x9mm calculus in the left lower calyx with no calculus in the ureter with absence of hydroureter. (Figure 3 and 4)

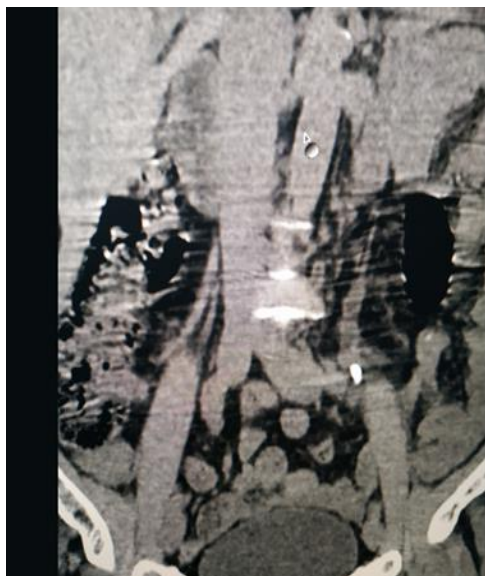


Fig 1: Stone in left Ureter



Fig 2: Stone In Left Ureter

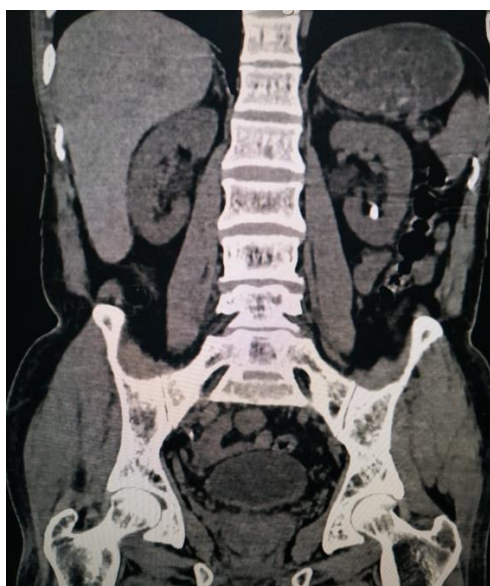


Fig 3: Stone In Left Kidney



Fig 4: Stone In Left Kidney

Discussion

Ureteric calculi formation is mostly idiopathic. Some of the factors that stimulate calculi formation are lack of adequate fluid intake, hot working environment along with congenital anomalies such as pelvic ureteric junction obstruction [7]. Urine usually flows downward from kidneys to bladder, through synchronized peristaltic motion of the ureteric smooth muscles, controlled by a spontaneously firing and progressively propagating pacemaker cells embedded in the renal pelvis and along the ureters. The retrograde movement of urine is seen only in refluxing ureter [8]. The rate of spontaneous passage is 68% for calculus <5 mm of size, and 47% in 5–10 mm [9].

In our patient the initial CT-KUB scan showed that the calculus was in the left mid ureter. To our surprise the next day it migrated spontaneously upward to the renal calyx. A similar phenomenon has been observed in the first ever report of one such case by Khan Z *et al* and also in the canines as reported in the veterinary literature [5, 10]. Various other possible mechanisms for such occurrence as described by Fallatah *et al.*, include excessive exercises causing ureteric dilation proximal to the calculus or due to the kidney's response to obstruction by reducing glomerular filtration rate in the renal pelvis and upward stone migration [6]. Also, the use of nonsteroidal anti-inflammatory drugs for relieving renal colic reduces the glomerular filtration rate by interrupting the renal pelvis pacemaker cells, which might reduce the ureteric peristalsis aiding the upward migration of calculi through the dilated low pressure system [11].

Conclusion

Spontaneous retropulsion of ureteric calculus into the kidney is a very rare occurrence and has been reported only twice in the past. Our report will be the first of its kind from India. Though rare, it has to be kept in mind while treating ureteric calculus as it emphasizes the practice of pre-operative imaging on the day of surgery to prevent unnecessary burden to patients.

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