

Distal ureteral stone: A challenging case on medical expulsion therapy with tamsulosin and deflazacort combination

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Abstract

Kidney stones (also called as renal calculi, nephrolithiasis, or urolithiasis) usually accounts for 15-20% cases in OPD. Distal ureteric calculi are kidney stones that have travelled down from either kidney to ureter and stuck in ureter due to size, shape of calculus or narrow ureter. This report highlights a presentation of case of distal ureteral stone in 35-year-old man. Diagnostic tests such as Ultrasonography, CT Scan and laboratory investigations were done. It was found to be the case of Ureteral stone in left ureterovesical junction with size of 5mm. Combination therapy with alpha blocker (Tamsulosin) and steroid (Deflazacort) was given for a period of 7 days. Stone expulsion time, stone expulsion rate, and requirement of analgesics were studied. It was found that, Tamsulosin with Deflazacort combination is proved to be efficient and has been considered as one of the optimum medical expulsive therapy in the management of symptomatic distal ureteric calculus.

Keywords: Tamsulosin, Deflazacort, Kidney stone, Renal calculi, Nephrolithiasis, Medical expulsion therapy

Introduction

Kidney stones (also called as renal calculi, nephrolithiasis, or urolithiasis) are deposits of minerals (possibly of calcium oxalate, uric acid, struvite, and cysteine). It can be serious at times especially when bilateral obstruction occurs, as it is associated with sepsis.¹ Renal stones can occur at any age. However, it was observed that incidence of renal stones is at its peak at age 20-49 years. As compared to females, males are having high incidence. Globally, prevalence ranges from 4-20%.² US Statistics suggests that one in 11 Americans usually develop kidney stones at least once in his/her lifetime.³⁻⁴ Annual cost of more than \$2 billion USD is incurred due to renal stones as per Urologic Diseases in America project estimates.⁵ In India, prevalence of urinary stones is 12%, out of them, 50% may have chances of renal damage or kidney damage. Indian "stone belt" consists of parts of Maharashtra, Gujarat, Rajasthan, Punjab, North East states, Haryana and Delhi.⁶

Ureteral stones are kidney stones that have travelled down from either kidney to ureters and stuck in ureter due to disproportion in size of calculus and lumen of ureter with symptoms such as back pain, terminal dysuria, and hematuria. They usually show presence of infection, occurrence of pain during micturition, or acute urinary retention.⁷ Due to the presence of pain because of ureteral stone, analgesics consumption is most commonly observed in these patients. Along with this, nausea and vomiting is also seen. Diagnostic methods of ureteral stones are performing Ultrasonography, Computed tomography (CT) scan and urine laboratory tests.⁸

Treatment of ureteral calculi includes use of alpha blockers such as alfuzosin, tamsulosin, doxazosin, prazosin, and silodosin. They act by relaxing smooth muscles of ureter. The increase in diameter of ureter allows passage of stones more quickly out of body.⁹ Use of steroid such as

Deflazacort prevents edematous reaction occurring due to stone and helps in stone passage. It is well tolerated with limited side effects when used for short period.¹⁰

In the current case study, we (authors) have used combination therapy of Tamsulosin and Deflazacort as treatment option for medical expulsion of distal ureteral stones.

Case Presentation

A 35-year-old man presented to the Urology OPD with complaints of acute colicky pain in the left flank and vomiting since 3 days prior to reporting at the OPD. The patient was experiencing excruciating pain in the left flank and the abdomen. The pain would originate in the back and radiate front and to the region of the groin. However, the patient experienced extreme discomfort during these episodes of pain and desired permanent relief. He also felt nauseated and had 4 episodes of vomiting prior to visiting the OPD. Patient was advised to get routine hematological, blood chemistry, urine routine, urine culture, ultrasound examination and CT scan. The patient was prescribed analgesics/antispasmodics for colic pain management. However, they were of no avail.

Table 1: Patient examination results

Examination Criteria	Results
Haemoglobin	10.9%
Serum creatinine	1.4 mg/dl
Prothrombin time	Normal
Sugar	98mg%
Urine routine	809 RBC/cu.mm
Urine Culture	Sterile
Ultrasound examination	5 mm calculus

Ultrasound showed left hydronephrosis as depicted in Figure 1.



Figure 1: USG Abdomen/Pelvis showing dilated PCS and upper ureter of the Left kidney

Computed tomography (CT) scan showed left ureterovesical junction 5 mm stone (see Figure 2).



Figure 2: CT scan showing left UVJ stone (5 mm)

Diagnosis

Based on the clinical presentation & investigations done, diagnosis of distal Ureteral stone in left ureterovesical junction (5mm) was made.

Management

1. Patient was offered a combination of Tamsulosin and Deflazacort was given for a period of 7 days (to be taken at bed time).
2. Patient was also prescribed antispasmodics to tackle the pain, and antibiotics prophylactically
3. Alkalizer was provided as symptomatic treatment.
4. Repeat Non-contrast computerized tomography (NCCT) was performed on follow-up and found no stone and no dilation of ureter.

Discussion

Urolithiasis is a common condition affecting approximately 12% of the world's population at some stage of lifetime. It is pertinent to implement metabolic measures to prevent stone recurrence, failing which, there exists a possibility of recurrence to the extent of 10–23% per year, 50% in 5–10 years, and 75% in 20 years. The rate of recurrence is generally higher in males than in females.¹¹ The patient, in the present case-scenario, was managed using tamsulosin 0.4 mg and deflazacort 30 mg combination for 7 days.

The Canadian Urological Association (CUA) Guidelines –2015 recommend the use of medical expulsive therapy with alpha-receptor antagonists in patients with distal ureteral stones of size <10 mm.¹² Liu H, et al. have recommended concomitant administration of tamsulosin and a corticosteroid (deflazacort or prednisone) along with standard therapy comprising analgesics, antibiotics and hydration for the spontaneous passage of stones upto 10 mm in size.¹³

A study conducted by Ye Z, et al., demonstrated a meaningful reduction in the expulsion time for larger stones by 6.1 days among patients prescribed tamsulosin¹⁴ together with a greater stone expulsion rate compared to placebo ($p < 0.001$),¹⁵ as illustrated in Figure 3. In another study, the efficiency of deflazacort when administered together with tamsulosin, as seen in terms of higher stone expulsion rates and the need for lower analgesic consumption ($p < 0.001$),¹⁶ as depicted in Fig. 4. Several studies have demonstrated the benefits of administration of tamsulosin and deflazacort in the management of distal ureteric calculi, as seen in terms of increased stone expulsion rates, decreased expulsion time,^{16,18-19} decreased need for hospitalization and decreased need for endoscopic procedures, together with good control of colic pain.¹⁷

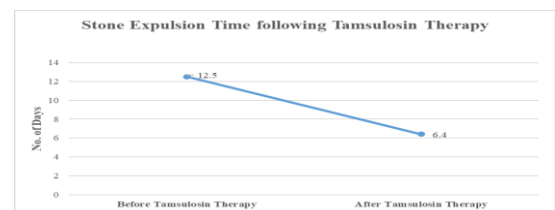


Figure 3: (a) Stone expulsion time following tamsulosin therapy

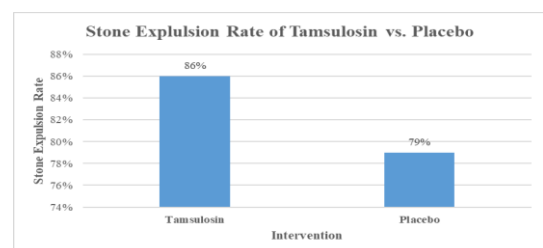


Figure 3: (b) Stone expulsion rate vs. placebo

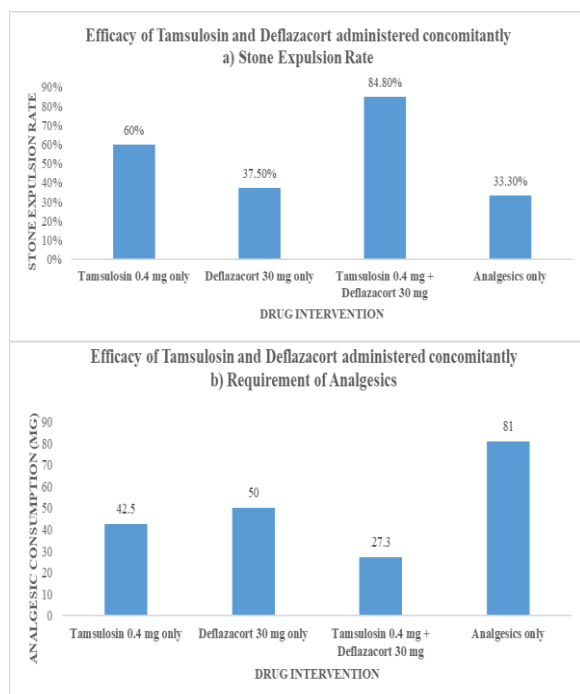


Figure 4: Efficacy of Tamsulosin and Deflazacort administered concomitantly (a) Stone Expulsion Rates (b) Requirement of Analgesics

Conclusion

Tamsulosin with Deflazacort combination is proved to be efficient and has been considered as first line of medical expulsive therapy in the management of symptomatic lower ureteric calculus. The rationale for this combination is based on efficacy, tolerability, and the comfort level urologists have in using tamsulosin plus deflazacort.

Source of Funding

None.

Conflict of Interest

Declaration of Competing Interest Dr. Abhijit Trailokya, Dr. Chetana Gupta and Dr. Amrit Karmarkar are the associated with Alkem Laboratories Limited, India. They help author in manuscript writing and publication. Authors declare no other competing interest.

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