

Study of the efficacy of alpha1-adrenergic antagonist in the medical management of lower ureteric calculi

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Abstract

Background: Ureteric colic is one of the most painful conditions that may occur and it is often caused by stone in ureter, more often in distal one third of the ureter. A watchful waiting approach may be expected to produce spontaneous stone expulsion in upto 50% cases, especially if stone size is <7mm. **Materials and Method:** The study was conducted in Department of General Surgery at GDMC, Dehradun. All patients presenting with ureteric colic in General Surgery OPD and Emergency were included in study. Patients were randomly divided into 2 groups: Group I received Tamsulosin 0.4 mg for 4 weeks and Group II received vitamin B complex. Patients were evaluated weekly, primary efficacy end point of study was stone expulsion as confirmed by plain X-Ray or ultrasonography. **Observations And Results:** 60 patients were included in the study, of which 30 were given Tab. tamsulosin 0.4mg and 30 were given placebo. 90% of patients in group I underwent spontaneous expulsion within 4 weeks as compared to 60% in group II. The average stone size was 6.03mm in group I and 6.16 in Group II. Mean duration of stone expulsion in group I was 7.87 days and I group II, 18.47 days ($p < 0.001$) **Conclusion:** Patients in tamsulosin group demonstrated a higher incidence of spontaneous stone passage, more rapid stone passage and a decreased need for analgesics and hospitalization.

Keywords: Distal ureteral stones, Tamsulosin, Ureteral, Ureteroscopy.

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INTRODUCTION

In general population, the prevalence of urinary stone disease is estimated to be 2-3%. Urolithiasis is most common in 20-40 year old and is 3 times more common in men than in women. Ureteric colic is one of the most painful conditions that may occur and it is often caused by stone in ureter, more often in distal one third of the ureter.

Waves of severe loin pain are referred typically to the groin, external genitalia and anterior surface of thigh.¹

A watchful waiting approach may be expected to produce spontaneous stone expulsion in upto 50% cases, especially if stone size is <7mm but some complications such as urinary infections, hydronephrosis and repeat colic events may occur. Ideal method for treatment depends on the type of equipment available, type, position and size of stone, needs of the patient, equipment availability and the surgical expertise.² The present study was undertaken to assess and compare the expulsive effect of orally administered tamsulosin as medical expulsive therapy for distal ureteric stone of size 5-7mm in diameter when administered for 4 weeks after the first painful manifestation with the placebo group receiving only vitamin B-complex.

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MATERIALS AND METHOD

Present study was single-center, prospective, observational study conducted in Department of Surgery, Government Doon Medical College, Dehradun, from March 2019 to February 2020. It was hospital based, observational study.

Inclusion criteria: all patients presenting with ureteric colic in General Surgery OPD and Emergency at Government Doon Medical College, Dehradun.

Exclusion criteria: all patients with UTI, severe hydronephrosis, multiple stones, intractable ureteric colic, solitary kidney, ulcer disease, diabetes, hypertension, deranged renal function and with previous distal ureteric surgery are excluded from the study.

Detailed personal, clinical, and radiological (X-ray, ultrasonographic, IVU) data was collected from every patient. Blood and urine examination also done and recorded. All patients were randomly divided into 2 groups: Group I received Tamsulosin 0.4 mg for 4 weeks and Group II received vitamin B complex. Both were given adequate analgesics and advised plenty intake of water (>3L /per day). Patients were evaluated weekly by examination, ultrasonography and s. creatinine measurement. Relevant data pertaining to symptoms collected. Primary efficacy end point of study was stone expulsion as confirmed by plain X-Ray or ultrasonography on follow up. Unsuccessful stone expulsion within 4 weeks was considered therapy failure and ureteroscopy was advised for the patient.

OBSERVATIONS AND RESULTS

60 patients were included in the study, of which 30 were given Tab. tamsulosin 0.4mg and 30 were given placebo. No patient was lost to follow up.

68.34% of patients belong to the age group of 20-40 years with mean age of 35.77 in Group I and 33.55 in Group II.

Parameter	Group I (Tamsulosin) n=30	Group II (Placebo) N=30	p-value
Expulsion rate <=4 weeks	27/30 (90%)	18/30 (60%)	0.038
Spontaneous expulsion rate >4 weeks	2 (6.66%)	3 (10%)	0.313
Ureteroscopies	1/30 (3.33%)	9/30 (30%)	0.044

The average stone size was 6.03mm in group I and 6.16 in Group II.

Mean duration of stone expulsion in group I was 7.87 days and I group II , 18.47 days(p<0.001)

In all patients stone was located distal to sacroiliac junction.

The table shows the amount of analgesia required by the patients in both groups.

No statistically significant difference was observed among the two groups in relation to age, gender, size of the stone and stone laterisation.

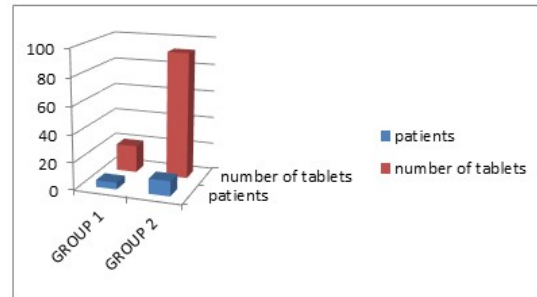


Figure 1:

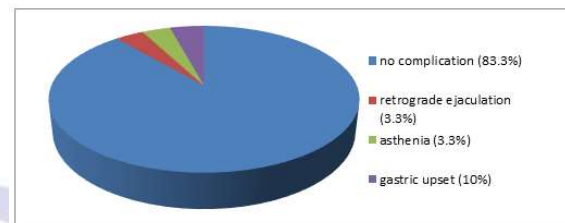


Figure 2: complications of tamsulosin

DISCUSSION

Patients in tamsulosin group demonstrated a higher incidence of spontaneous stone passage, more rapid stone passage and a decreased need for analgesics and hospitalization. The data confirms the positive findings of group I on the use of tamsulosin for the expulsion of lower ureteric stones of <7mm. Similar results were shown by Dellabella *et al.*³, who used tamsulosin as a spasmolytic drug during episodes of ureteral colic. Many studies have reciprocated the effect of tamsulosin in causing early expulsion and rapid pain relief.^{4,5} Another study has shown addition of corticosteroids to tamsulosin inducing more rapid stone expulsion.⁶ Studies have postulated that tamsulosin may cause increase in urine load above the calculus with decreased frequency of peristaltic contractions below the calculus which helps in expulsion of the same as well as cause a decrease in the algogenic stimulus.⁷ This selective alpha 1 blocker should therefore be included in management of distal ureteral stones, when a conservative approach is considered. It is beneficial in terms of clearance of lower ureteral stones and studies have shown this effect to be more evident for larger stones, especially when combined with shock wave lithotripsy (SWL).⁸ It can be the first line drug for general surgeons, urologists and family physicians in home management of the patient with a diagnosis of distal ureteral stone due to its high efficacy, decreased side effects and excellent patient satisfaction.

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