

Comparison of two conservative methods in treatment of ureteric stones

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Abstract

Background: Urolithiasis is important major public health problem. This study was undertaken in order to compare the efficacy of tamsulosin in comparison with the oral fluids. **Material and Methods:** A comparative study was undertaken among 50 patients where the patients were equally divided in to two equal groups of 25 patients each. One group received oral fluids and other group received tamsulosin. The patients were observed strictly on weekly basis and asked for any history of passage of calculi and findings were recorded and patients were monitored and followed up for a period of one month. **Results:** Majority of the patients in Oral fluids and Tamsulosin group were males and aged between 41 – 50 years. Right ureter was affected in majority of the patients. Lower 1/3rd of the Ureter is affected among 36% of the oral fluid group and 40% of the Tamsulosin group. About 56% of the oral fluid group patients had stone size of less than 5 mm and 56% of the patients in Tamsulosin group had stone size of 6 – 10 mm. About 32% of the patients in oral fluid group passed the stone by 21 days of follow up and 48% of the patients in Tamsulosin group passed the stone by 14 days of follow up. Giddiness was noted in 16% and Headache was noted in 8% of the patients in Tamsulosin group. No side effects were noted in Oral fluids group. **Conclusion:** The tamsulosin group had expulsion of ureteric stones when compared to the oral fluid group.

Keywords: Tamsulosin, Oral Fluid, Ureteric calculi, expulsion of stone, Side effects

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Introduction

Urolithiasis is a major public health problem and is one of the three most common urological diseases. The disease is known to affect 12% of the world's population[1]. Ureteric calculi forms 20% of the total urinary tract stones[2]. The etiology of ureteric stones remains obscure and literature available suggests that, the ureteric stones are due to multifactorial causation[3]. The treatment of ureteric stone is determined by the location, size of the stone and complications. The management of stones is conservative in first instance due to high spontaneous passage rate. The accurate prediction of stone passage may prevent unnecessary intervention therefore possible complications. NSAIDs are the treatment of choice for the acute renal colic which act by inhibiting prostaglandin synthesis and Diclofenac Sodium is the commonly used drug[4]. The literature suggests that, specific adrenoceptors subtypes (Alpha 1A/ Alpha 1B/ Alpha 1D) are prevalent in the distal part of the ureters[5]. Hence alpha – 1 agonist Tamsulosin are also useful in facilitating the spontaneous expulsion of distal ureteral stones[6].

This study was mainly undertaken to study the role of conservative management in treatment of ureteric stones in a tertiary care centre.

Material and methods

A comparative study was undertaken in samples, 50 patients aged 10 to 70 years with ureter calyceal kidney stones were treated in a tertiary care centre from a period between January 2019 to December 2020. The patients with age of more than 20 years, calculus in ureter with stone of size up to 10 mm, stone at multiple sites, patients with post extra corporeal shock wave lithotripsy with steinstrass are included.

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The patients with use of any other anti hypertensive alpha blocker drug and congenital abnormality detected in the ultrasonography were excluded from the study. Fifty cases thus selected were randomly divided in to two equal groups where twenty five patients were advised to take plenty of oral fluids and treated with NSAIDs (Diclofenac sodium), IV fluids and antiemetics. Twenty five patients were treated with Tamsulosin (alpha blocker) 0.4 mg HS for one month along with oral fluids NSAIDs (Diclofenac sodium) IV fluids and antiemetics. Each case was subjected for elaborative history and physical examination and relevant investigation.

The patients were observed strictly on weekly basis and asked for any history of passage of calculi and findings were recorded and patients were monitored and followed up for a period of one month. If the stone passed successfully, it was confirmed with Ultrasonography. After 1 month if treatment failed, conservative management was discontinued and patients were advised surgery. The data was analyzed with appropriate tests using Statistical Package for Social services.

Results**Table 1: Baseline characteristics of the study group**

Baseline characteristics		Oral fluids N (%)	Tamsulosin N (%)
Sex	Male	17 (68.0)	15 (60.0)
	Female	8 (32.0)	10 (40.0)
Age group	21 – 30 years	3 (12.0)	0
	31 – 40 years	8 (32.0)	6 (24.0)
	41 – 50 years	10 (40.0)	10 (40.0)
	51 – 60 years	4 (16.0)	8 (32.0)

Majority of the patients in Oral fluids and Tamsulosin group were males. About 40% of the patients in both the groups belonged 41 – 50 years of age.

Table 2: Clinical characteristics of the study group

Clinical characteristics		Oral fluids	Tamsulosin
		N (%)	N (%)
Side affected	Left	11 (44.0)	10 (40.0)
	Right	16 (56.0)	15 (60.0)
Site in ureter	Upper 1/3 rd	7 (28.0)	11 (44.0)
	Middle 1/3 rd	9 (36.0)	4 (16.0)
	Lower 1/3 rd	9 (36.0)	10 (40.0)
Size of the stone	Less than 5 mm	14 (56.0)	11 (44.0)
	6 – 10 mm	11 (44.0)	14 (56.0)

About 56% of the oral fluid group and 60% of the Tamsulosin group had ureteric stones on right side. Lower 1/3rd of the Ureter is affected among 36% of the oral fluid group and 40% of the Tamsulosin group. About 56% of the oral fluid group patients had stone size of less than 5 mm and 56% of the patients in Tamsulosin group had stone size of 6 – 10 mm.

Table 3: Outcome in the study group

Outcome (Stone passed)	Oral fluids N (%)	Tamsulosin N (%)
7 days	4 (16.0)	4 (16.0)
14 days	6 (24.0)	12 (48.0)
21 days	8 (32.0)	6 (24.0)
28 days	7 (28.0)	3 (12.0)

About 32% of the patients in oral fluid group passed the stone by 21 days of follow up and 48% of the patients in Tamsulosin group passed the stone by 14 days of follow up.

Table 4: Complications in the study group

Complications	Oral fluids N (%)	Tamsulosin N (%)
Giddiness	0	4 (16.0)
Headache	0	2 (8.0)
Nil	25 (100.0)	19 (76.0)

Giddiness was noted in 16% and Headache was noted in 8% of the patients in Tamsulosin group. No side effects were noted in Oral fluids group.

Discussion

This study was mainly undertaken to study the effectiveness of two different methods of conservative treatment of ureteric stones. The therapeutic approach for the ureteral stones includes active intervention and conservative wait and watch approaches. Extracorporeal shock wave lithotripsy and ureterorenoscopy are some mini invasive therapies apart from surgery. But each procedure is not free from complications[6,7].

This study had shown that, majority of the patients in Oral fluids and Tamsulosin group were males and aged between 41 – 50 years. The literature available had shown that, 20 – 40 years is the commonest age group affected with ureteric stones[8,9]. The studies available have reported the male to female ratio between 3:1 and 2:1. The males and the patients with family history of stones are three times more likely to be susceptible than other for stone disease[9].

Right ureter was affected in majority of the patients in this study. In a study by Ahmed et al, 44 patients had stone on right side and 43 patients on left side[11].

Lower 1/3rd of the Ureter is affected among 36% of the oral fluid group and 40% of the Tamsulosin group. A study by Fox et al had reported that lower 1/3rd of the ureter is commonly affected (61%) than middle and upper 1/3rd[10]. The distance of ureter to be traversed is directly proportional to the probability of spontaneous ureteral stone passage and inversely related to the stone size. So the spontaneous passage of lower ureteric calculi is more likely and also the effect of Tamsulosin on lower ureteric calculi is more than the calculi in the ureteral sites[11].

About 56% of the oral fluid group patients had stone size of less than 5 mm and 56% of the patients in Tamsulosin group had stone size of 6 – 10 mm. In a similar study by Kumar et al, the mean size of the calculus was 6.9 mm in Naftopidil group and 7.1 mm in Tamsulosin group. In absence of external ureteral compression or internal

narrowing, the width of stone is significant measurement affecting the passage of stone[12,13].

About 32% of the patients in oral fluid group passed the stone by 21 days of follow up and 48% of the patients in Tamsulosin group passed the stone by 14 days of follow up. The literature available noted that, the stimulation of alpha 2 adrenergic receptors increases ureteral peristaltic frequency, smooth muscle and contractile force, resulting in ureteral spasm and decreased ureteral flow[2].

Giddiness was noted in 16% and Headache was noted in 8% of the patients in Tamsulosin group. No side effects were noted in Oral fluids group. In a study by Autorino et al, about 6% of the patients experienced side effects associated with expulsive therapy.⁵

Conclusion

This study had shown that, the tamsulosin helps in expulsion of the ureteral stone of size less than 10 mm. Hence it decreases the need of invasive surgery and its associated effects.

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