CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.1064351

Available online at: http://www.iajps.com Research Article

THE AGE DISTRIBUTION AND EFFECTIVENESS OF LOW DOSE TAMSULOSIN IN LOWER URETERIC STONES

Dr. Taimoor Ahmed Jataoi [1], Dr. Adeel Mahesar [1], Dr. Javed Altaf Jat [1*] and Dr. Muhammad Ayyaz [2]

[1] Department of Urology, Liaquat University of Medical and Health Sciences (LUMHS), Jamshoro

[2] Brandon Regional Hospital, Brandon, Florida, U.S.A

Abstract:

Objective: *To determine the effectiveness of low dose tamsulosin as a medical expulsive therapy in patients with lower ureteric stones.*

Patients and Methods: *The six months randomized control trial was conducted on all patients with either gender, age range 30-60 years and stone size 4-10 mm in the lower 1/3rd of the ureter determined on ultrasound at tertiary care hospital. Group A patients was offered low dose tamsulosin (0.2 mg) one tablet daily in the morning for a maximum of 4 weeks and group B served as control. The final outcome was measured at the end of 4th week of treatment. Patients were instructed to note the time and the date of expulsion of stone. Absence of echoic shadows on lower 1/3rd of ureteric line on ultrasound was taken as effectiveness (expulsion of stone).*

Results: *In control group mean age was 45.52 ±6.70 years whereas in low dose Tamsulin mean age was 46.72 ±6.73 years. Frequency of male was higher in both control and low dose Tamsulin group, i.e. 39 (78%) and 21 (42%) respectively. In control group effectiveness was found 3 (6%) patients whereas in low dose Tamsulin group effectiveness was found in 47 (94%).*

Conclusion: *In our study the effectiveness of low dose tamsulosin as a medical expulsive therapy in patients with lower ureteric stones was higher as compared to control.*

Keywords: *Low dose tamsulosin, Lower ureteric stones, Medical expulsive therapy*

Corresponding author:

Dr. Javed Altaf Jat,
Assistant Professor
Department of Urology,
Liaquat University of Medical and Health Sciences (LUMHS),
Jamshoro
Email: *zulfikar229@hotmail.com*

QR code

Please cite this article in press as Javed Altaf Jat et al., ***The Age Distribution and Effectiveness of Low Dose Tamsulosin in Lower Ureteric Stones****, Indo Am. J. P. Sci, 2017; 4(11).*

INTRODUCTION:

Urolithiasis is an ancient disease with global distribution and has perplexed human beings and physicians for many centuries. Pakistan is situated in the middle of Afro-Asian stone belt, a high region of stone incidence. [1] Treatments for ureteric stones traditionally include watchful waiting, extracorporeal shock wave lithotripsy, ureteroscopy and open ureterolithotomy. Minimally invasive techniques, such as shock wave lithotripsy and endourology, are now being used more frequently. Even minimally invasive surgery, however, is not free of complications and the cost is high.[2] Stone size and location are the main factors that can influence their passage; a stone smaller than 4 mm is usually passed after conservative treatment. [2] The human ureter contains a high number of alpha adrenergic receptors, especially α1d -receptors at the lower part of the ureter. [3,4] Tamsulosin is a combined alpha selective adrenergic antagonist that is an alternative to other medications, such as calcium channel blockers, corticosteroids, and analgesic and anti-inflammatory drugs, for the treatment of distal ureteric stones. [5-7]The standard dose of tamsulosin for the treatment of distal uretic stones is 0.4 mg/day; many reports from Asian countries have confirmed that low-dose tamsulosin (0.2 mg/day) is effective in the treatment of benign prostatic hyperplasia (BPH). [5-7]There are few published clinical studies dealing with low-dose tamsulosin for medical expulsive therapy for ureteral stones. [8,9] In a randomized controlled trial (RCT) the ureteral stones expulsion rate was 4%, 40% and 68% in control, low dose (0.2mg) and standard dose (0.4 mg) tamsulosin groups respectively. [10] In another RCT The stone expulsion rate was significantly higher in low dose tamsulosin group than in control group (77% vs 50%,P=0.002). No significant differences were noted in the stone expulsion time and analgesic use between the groups. [11] There was a validity issue in the above mentioned studies as the sample sizes were and hence the results cannot be generalized [10-11]. Furthermore no local data is available on this topic locally and there is dearth of literature internationally as well. Therefore the present study was designed with proper calculation of sample size to assess the effectiveness of low dose tamsulosin in relation to age, so that if founds to be effective then the same could be used in future with confidence in patients with lower ureteric stones.

PATIENTS AND METHODS:

The six months randomized controlled trial was conducted for the determination of the demographical profile and effectiveness of low dose tamsulosin as a medical expulsive therapy in patients with lower ureteric stones at tertiary care hospital. The lower ureteric stones were considered as presence of echoic shadows on lower 1/3rd of ureteric line on ultrasound was taken as lower ureteric stones while the effectiveness was labeled when no stone in the lower 1/3rd of the ureter at the end of 4th week of treatment, confirmed on ultrasound was taken as effectiveness positive. The inclusion criteria were the patients with stone size 4-10 mm determined on ultrasound, presence of stone in the lower 1/3rd of the ureter either gender and age range 30-60 years while the exclusion criteria were urinary tract infection, multiple stones, pregnancy, severe hydronephrosis, hypotension, ureteral stricture and current use of calcium antagonists or alpha adrenergic blockers. To make two groups random allocation was done by a third person not involved in the study by asking patients to pick one sealed, opaque envelop bearing a card in it of group A and B. Group A patients was offered low dose tamsulosin (0.2 mg) one tablet daily in the morning for a maximum of 4 weeks and group B served as control. All patients were prescribed 50 mg diclofenac suppository on demand for pain relief. Patients were further advised to take minimum 2 liters of water daily. The patients were followed up on weekly basis along with X-ray KUB and ultrasonography. The final outcome was measured at the end of 4th week of treatment. Patients were instructed to note the time and the date of expulsion of stone. Absence of echoic shadows on lower 1/3rd of ureteric line on ultrasound was taken as effectiveness (expulsion of stone). The status of stone expulsion in terms of effectiveness and the demographics like age, gender, size of stone and time taken for stone expulsion was noted and entered in the questionnaire attached as annexure. Statistical Package for Social Sciences (SPSS) version 17was used for data entry and analysis. Frequency and percentages was calculated for gender and effectiveness (stone expulsion).

RESULTS:

Mean age of the patients in control group was 45.52 ±6.70 years whereas mean age of the patients in low dose Tamsulosin was 46.72 ±6.73 years. (Table 1) There were more male in both control and low dose Tamsulosin group, i.e. 39 (78%) and 21 (42%) respectively.(Figure 1) Mean stone size of the patients in control group was 6.16 ±1.20mm whereas mean stone size of the patient in low dose Tamsulin was 6.52 ±1.19mm. The results are presented in Table 1-4 and figure 1.

TABLE 1: AGE OF THE PATIENTS n=100

AGE OF THE PATIENTS (in years)	Control	Tamsulosin	Mean Difference	P-value	95% C.I
	Mean ±SD	Mean ±SD			
	45.52 ±6.70	46.72 ±6.73	-1.2	0.374	-3.8 to 1.46

SD= Standard Deviation

TABLE 2: COMPARISON OF EFFECTIVENESS IN BOTH GROUPS n=100

Effectiveness	Group		Total	p-value
	Control	Tamsulosin		
Yes	3 (6)	19 (38)	22 (22)	0.001
No	47 (94)	31 (62)	78 (78)	
Total	50 (100)	50 (100)	100 (100)	

n (%)

TABLE 3: ≤45 YEARS AGE GROUPCOMPARISON OF EFFECTIVENESS IN BOTH GROUPS n=100

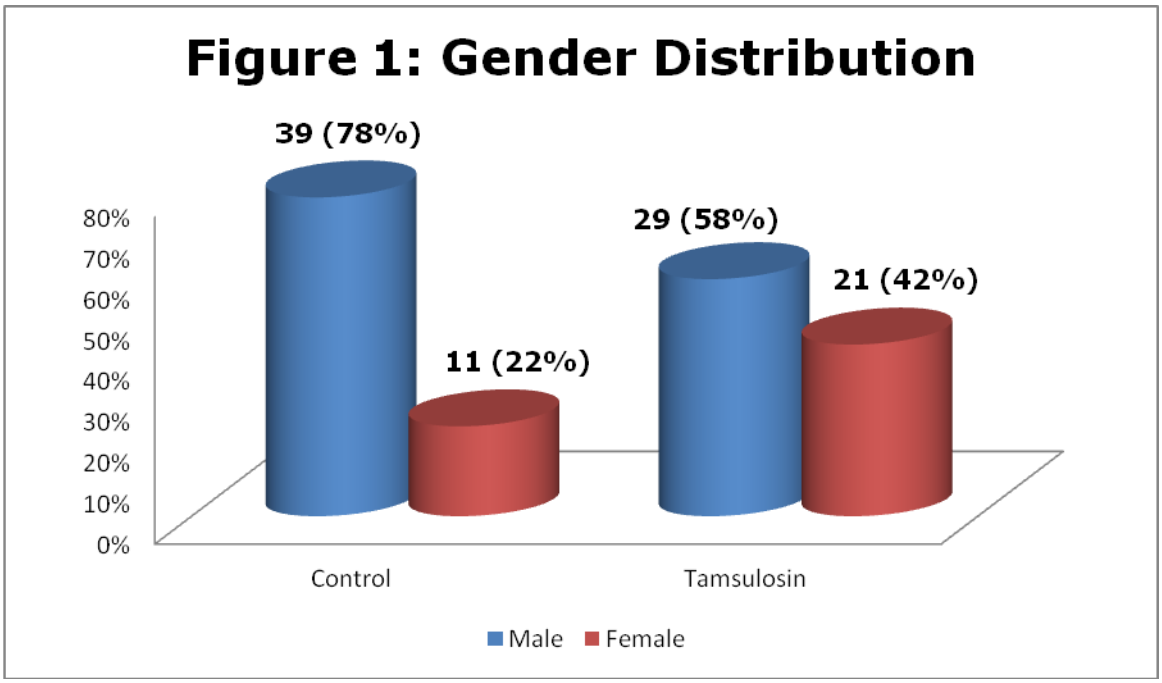
Effectiveness	Group		Total	p-value
	Control	Tamsulosin		
Yes	3 (7.5)	14 (37.8)	17 (22.1)	0.001
No	37 (92.5)	23 (62.2)	60 (77.9)	
Total	40 (100)	37 (100)	77 (100)	

n (%)

TABLE 4: >45 YEARS AGE GROUPCOMPARISON OF EFFECTIVENESS IN BOTH GROUPS n=100

Effectiveness	Group		Total	p-value
	Control	Tamsulosin		
Yes	0 (0)	5 (38.5)	5 (21.7)	.027
No	10 (100)	8 (61.5)	18 (78)	
Total	10 (100)	13 (100)	23 (100)	

n (%)



FIG,1: GENDER DISTRIBUTION

DISCUSSION:

There are few published clinical studies dealing with low-dose tamsulosin for medical expulsive therapy for ureteral stones [8,9]. In a randomized controlled trial (RCT) the ureteral stones expulsion rate was 4%, 40% and 68% in control, low dose (0.2mg) and standard dose (0.4 mg) tamsulosin groups respectively [10]. In another RCT the stone expulsion rate was significantly higher in low dose tamsulosin group than in control group (77% vs 50%, P=0.002). No significant differences were noted in the stone expulsion time and analgesic use between the groups [11]. Improved detection of stones, increasing lifespan, and dietary changes may be related to the increased prevalence of stone disease [12]. A meta-analysis by the American Urological Association (AUA) Guidelines Panel determined that ureteral stones with a diameter of less than 5 mm will pass in up to 98% of cases. [14] For stones with diameters greater than 7 mm, the overall chance of spontaneous passage is low. [15, 16] Overall passage rate is 25% for proximal, 45% for middle and 75% for distal ureteric stones. [14] In this study, Overall effectiveness was found in 22 (22%) of the patients. In control group effectiveness was found 3 (6%) patients whereas in low dose Tamsulin group effectiveness was found in 47 (94%). Chi-square test was applied and statistically sufficient evidence of significant relationship was observed as p-value was found to be less than level of significance (p-value <0.01).

CONCLUSION:

The effectiveness of low dose tamsulosin as a medical expulsive therapy in patients with lower ureteric stones was higher as compared to control.

REFERENCES:

1.Rizvi SA. Naqvi AA, Hussain Z, Hussain M, Zafar MN, Sultan S, et al. Management of pediatric urolithiasis in Pakistan: Experience with 1,440 children. J Urol. 2003;169: 634-37.

2.Dellabella M, Milanese G, Muzzonigro G. Efficacy of tamsulosin in the medical management of juxtavesical ureteral stones. J Urol. 2003;170:2202–5.

3.Troxel SA, Jones AW, Magliola L, Benson JS. Physiologic effect of nifedipine and tamsulosin on contractility of distal ureter. J Endourol. 2006;20:565–8.

4.Sigala S, Dellabella M, Milanese G, Fornari S, Faccoli S, Palazzolo F, et al. Evidence for the presence ofα adrenoceptor subtypes in the human ureter. Neurourol Urodyn. 2005;24:142–8.

5.Park CH, Chang HS, Oh BR, et al. Efficacy of low-dose tamsulosin on lower urinary tract symptoms suggestive of benign prostatic hyperplasia: a nonblind multicenter Korean study. Clin Drug Invest. 2004;24:41–7.

6.Li NG, Chen S, Yang XH. Efficacy of low-dose tamsulosin in Chinese patients with symptomatic

benign prostatic hyperplasia. Clin Drug Invest. 2003;23:781–7.
7.Lee E. Comparison of tamsulosin and finasteride for lower urinary tract symptoms associated with benign prostatic hyperplasia in Korean patients.J Int Med Res. 2003;30:584–90.
8.Lojanapiwat B, Kochakarn W, Suparatchatpan N, Lertwuttichaikul K. Effectiveness of low-dose and Lertwuttichaikul K. Effectiveness of low-dose and stones: a randomized controlled study. J. Int. Med. Res. 2008;36:529–36.
9.Kobayashi M, Naya Y, Kino M, Awa Y, Nagata M, Suzuki H, et al. Low dose tamsulosin for stone expulsion after extracorporeal shock wave lithotripsy: efficacy in Japanese male patients with ureteral stone. Int J Urol. 2008;15:495–8.
10.Lojanapiwat B, Kochakarn W, Suparatchatpan N, Lertwuttichaikul K. Effectiveness of low-dose and standard-dose Tamsulosin in the treatment of distal ureteric stones: A randomized controlled study. J Int Med Res. 2008;36:529-36.
11.Kaneko T, Matsushima H, Morimoto H, Tsuzaka Y, Homma Y. Efficacy of low dose tamsulosin in medical expulsive therapy for ureteral stones in Japanese male patients: A randomized controlled study. Int J Urol. 2010 May;17(5):462-5.
12.Stamatelou KK, Francis ME, Jones CA, Nyberg LM Jr, Curhan GC. Time trends in reported prevalence of kidney stones in the United States,1976-1994. Kidney Int 2003;63:1817-23.
14.Segura JW, Preminger GM, Assimos DG, et al. Ureteral Stones Clinical Guidelines Panel summary report on the management of ureteral calculi. The American Urological Association. J Urol 1997;158:1915-21.
15.Miller OF, Kane CJ. Time to stone passage for observed ureteral calculi: a guide to patient education. J Urol 1999;162:688-90.
16.Ibrahim AI, Shetty SD, Awad RM, Patel KP. Prognostic factors in the conservative management of ureteric stones. BJU 1991;67:358-61.