

COMPARISON OF THE EFFICACY (IN TERMS OF STONE EXPULSION) OF TAMSULOSIN VERSUS NIFEDIPINE IN DISTAL URETERIC STONE

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ABSTRACT:

INTRODUCTION: In western prosperous countries, a great research has been done on these two medicines in urolithiasis. Extent of disease is varying from developing countries to developed countries, specially due to late identification of diseases, late in examination which enhances the consequences of disease in ureteral stone or in any other disease.

OBJECTIVES: To compare the efficacy (in terms of stone expulsion) of tamsulosin versus nifedipine in victims with distal ureteral stone.

MATERIAL AND METHOD: All of 86 patients with distal ureteric stone, 20 to 50 years of both genders were included. Patients with proximal ureteric stricture, gross hydronephrosis, previous ureteral surgery and solitary kidney were excluded. After informed, written consent, all selected cases were divided in two groups by lottery method. In group A patients, tamsulosin was given while in group B patients, nifedipine was given. All patients were followed weekly by the researcher till 4 weeks and ultrasonography in both groups was done by the one consultant radiologist for evaluation of efficacy.

RESULTS: Mean age was 32.29 ± 6.81 years. Out of these 86 patients, 53 (61.63%) were male and 33 (38.37%) were females with. Mean size of stone was 6.69 ± 1.49 mm. Stone expulsion was seen in 37 (86.05%) patients in group A (tamsulosin group) and 25 (58.14%) patients in group B (nifedipine group) with p-value of 0.004.

CONCLUSION: This survey concluded that efficacy (in terms of stone expulsion) of tamsulosin is better as compared to nifedipine in distal ureteric stone

KEYWORDS: Distal Ureter Stone, Tamsulosin, Nifedipine, Expulsion.

INTRODUCTION:

The third most frequent disease of urinary tract in whole world is urolithiasis, which effect usually two-percent population with almost fifty percent recurring rate^[1]. Ureteric stone occupies a main place in routine medical practices and experts are demanded to recommend appropriate treatments^[2]. Recently, by using the therapies of pharmacology, use of perceptive wait approaches have been expanded^[3]. Medical expulsive therapy [MET] is suggested to elevate stone crossing and decrease the requirement of extracorporeal shock wave lithotripsy^[4]. Most of the patients with urolithiasis contain stones of

small size that are present in distal ureter and able to cross continuously. Removal of stone and time to move the stones depends upon size of stone and it's location^[5].

Two categories of therapy are present, alpha adrenergic receptor antagonist and calcium. Recently, for distal ureteral calculi, good consequences have been shown by MET, related to stone removal and lessen the ureteral colic

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pain, by the use of nifedipine and prednisolone and can regulate the functioning of ureter, blocked by stones. Alpha receptor blocker is using in this interest is tamsulosin^[6,7]. Gandhi HR *et al*^[8] has shown remarkable differences in stone removal rate by using tamsulosin (80%) compared to nifedipine (55%) for distal ureteric stone. In most of 28-day trials^[10] containing stones of greater than 15mm, the rate of distal ureteric stone crossing was 34–71% in control group, 76.1–81% in group treated with nifedipine and 78.3–100% in group treated with tamsulosin.

In western prosperous countries, a great research has been done on these two medicines in urolithiasis. Extent of disease is varying from developing countries to developed countries, specially due to late identification of diseases, late in examination which enhances the consequences of disease in ureteral stone or in any other disease. So randomized controlled trial to compare the efficiency (in terms of stone expulsion) of tamsulosin versus nifedipine in distal ureteric stone in local population.

MATERIALS AND METHODS:

This randomized controlled trial was performed at the outpatient Department of Urology, Bahawal Victoria Hospital, Bahawalpur, and Shahida Islam Teaching Hospital, Lodhran from 1st April 2018 to 31st March 2019. A sample of 86 patients was recommended through consecutive non probability sampling technique. Inclusion criteria was patients of age 20-50 years of distal ureteric stone (presence of an acoustic shadow ≤ 10 mm in intramural part of ureter on ultrasonography and radio-opaque shadow in the juxtavesical part below the pelvic brim) of size ≤ 10 mm. Patients with gross hydronephrosis, pregnant women, h/o previous ureteral surgery, solitary kidney and ureterocele were excluded. After taking permission from Institutional Ethical Review Committee, the consent of the patients was sought.

Selected patients were allowed to choose a slip from all confounded slips [half with letter A, half with letter B] and the patient was allowed in that respective category. In category A patients, 0.4 mg Tamsulosin was given daily at bed time for 4 weeks while in category B patients, 30mg nifedipine was given daily for 4 weeks. Both categories were given Tab. Ciprofloxacin 500mg 12 hourly and tab diclofenac Sodium 50mg. Compliance in both groups was noted by subjective assessment. All patients were followed weekly by the researcher till 4 weeks and ultrasonography in both categories was done by the one consultant radiologist for evaluation of efficacy (in terms of stone expulsion from ureter).

All the data was entered and inspected by the use of SPSS version 20.0. The numeric variables were represented as mean deviation and variance. Consistency and proportions were calculated for numeric variables. Chi square was used to contrast the efficacy and p-value ≤ 0.05 was regarded as significant.

RESULT:

The mean age of patients in category A was 32.19 ± 7.15 years and in category B was 32.40 ± 6.54 years. Majority of the patients 58 (67.44%) were between 20-35 years of age and expressed in table I.

Out of these 86 patients, 53 (61.63%) were male and 33 (38.37%) were females. Mean size of stone was 6.69 ± 1.49 mm. Mean size of stone in category A was 6.81 ± 1.33 mm and in category B was 6.75 ± 1.56 mm as shown in Table II. Mean BMI was 28.77 ± 5.62 kg/m².

Stone expulsion was seen in 37 (86.05%) patients in category A (tamsulosin group) and 25 (58.14%) patients in category B (nifedipine group) with p-value of 0.004 as shown in Table III.

Table-I: Age distribution for both categories (n=86).

Age (years)	category A (n=43)		Category B (n=43)		Total (n=86)	
	No. of patients	%age	No. of patients	%age	No. of patients	%age
20-35	30	69.77	28	65.12	58	67.44
36-50	13	30.23	15	34.88	28	32.56
Mean ± SD	32.19 ± 7.15		32.40 ± 6.54		32.29 ± 6.81	

Table-II: Distribution of patients according to stone size.

Stone size	category A (n=43)		category B (n=43)		Total (n=86)	
	Frequency	%age	Frequency	%age	Frequency	%age
1-5 mm	11	25.58	10	23.26	21	24.42
6-10 mm	32	74.42	33	76.74	65	75.58
Mean ± SD	6.81 ± 1.33		6.75 ± 1.56		6.69 ± 1.49	

Table-III: Comparison of Efficiency (in terms of stone removal) between both categories (n=86).

		category A (n=43)		category B (n=43)		Chi square values	p-value
		Frequency	%age	Frequency	%age		
EFFICACY	Yes	37	76.67	25	40.0	8.32	0.004
	No	06	23.33	18	60.0		

DISCUSSION:

Intercessional treatment includes medical expulsive therapy (MET), extracorporeal shock wave lithotripsy (ESWL), percutaneous nephrolithotomy, ureteroscopy, laparoscopic techniques. With the help of researches, it became confirmed that potential of medical treatments to aid stone removal has elevated^[10-13]. Related studies have modernized our comprehension of capacity of MET in aiding stone removal. Also, MET decreases the hospital costs stops unimportant operations integrated risks and problems. In recent practices, MET either with nifedipine or tamsulosin has revealed too increase stones passing chances of normal size LUS^[13]. although, European urological associations revealed that these two drugs are affordable therapy option to help ureteral stone removal^[14,15]. This study was conducted for the comparison of the efficiency (in terms of stone removal) of tamsulosin

versus nifedipine in patients with distal ureteric stone.

It was expressed by meta-analysis that tamsulosin can enhance the stone removal rate comparative to nifedipine in victims with LUS. Subgroup analysis expressed no remarkable distinction in the two medicines regarding to high or low side effects^[16]. Micali et al^[17] described that in patient having higher-mid ureteral stones, nifedipine drug was effective and acceptable than that of tamsulosin for stone removal. Picozzi et al^[1] issued systematic review and meta-analysis of medical expulsive technology for LUS and suggested that there are no differences between tamsulosin and nifedipine categories regarding to stone removal rate.

In particular Morita T et al^[19] elaborated effective result in acceleration of lower tract ureteral stone passing by use of alpha-1 blocker. Cao D et al^[16], In a randomly controlled study, suggested a remarkable differences in

removal rate of stone between the groups dosed with tamsulosin and controlled category. Same result were shown by Dellabella et al^[20]. Trial by Vincendeau et al^[22] (n=130) and Hermanns et al^[21] (n=100) comprises mean stone size of 3-4mm, stone removal rate of 76% and 85%, respectively, with tamsulosin contrasted with 70% and 88%, respectively, with placebo, that had no importance. Trail by Ferre et al^[23]. Confirmed advantage was assessed with stone removal in 76% of the tamsulosin category contrasted with 64% in the accurate care category (P=.50). In a meta-analysis^[25], There was no differences between active therapy and placebo (p=0.77), or between tamsulosin and nifedipine (p=0.76)^[14]. On the whole, it is concluded that efficacy (in terms of stone expulsion) of tamsulosin is better as compared to nifedipine in distal ureteric stone.

CONCLUSION:

This study concluded that efficacy (in terms of stone expulsion) of tamsulosin is better as compared to nifedipine in distal ureteric stone. So, we recommend that tamsulosin should be used routinely in our general practice to avoid invasive procedures in such patients.

CONFLICT OF INTEREST:

There is no declared conflict of interest.



ETHICAL REVIEW COMMITTEE:

Ethical review committee of the said institute has reviewed and approved this article.

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Failures are often the results of timidity and fears;
disappointments are the results of bashfulness; hours of leisure
pass away like summer-clouds, therefore, do not waste
opportunity of doing good

Hazrat Ali (Karmulha Wajhay)