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ORIGINAL ARTICLE

Comparison between Tamsulosin and Tadalafil Versus Tamsulosin alone to treat Lower Ureteric Stones Through Medical Expulsive Therapy: a comparative study

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ABSTRACT

Aim: To compare between Tamsulosin and Tadalafil versus Tamsulosin alone to treat Lower Ureteric Stones through Medical Expulsive Therapy

Study design: Comparative study

Place and duration: This study was done at Ghulam Muhammad Mahar Medical college hospital Sukkur, Pakistan from February 2021 to July 2021.

Methodology: This study was carried our in our institute for 6 months. Patients that were having stones of 5mm to 10mn were included in the study, because these stones are detected easily through CT scans and ultrasound. Patients were randomly divided into two groups each containing 86 persons. Prescription of tamsulosin of 0.3 mg and tadalafil of 8 mg was given to group A patients and 0.3mg, tamsulosin was prescribed to group B

Results: The stone expulsion rate was 78.0% in group A and 61.5% in group B. The stone passage time was 1.55 vs. 2.22 weeks in group B. In 45 patients there was no stone expulsion at the end of 3rd week of treatment. So these patients were treated with laser lithotripsy. A comparison study of two groups showed that group B has more episodes of flatulent pain than group A. The average need for analgesia was more in group B than group A.

Conclusion: It is found from this study that tamsulosin alone is less effective than tamsulosin and tadalafil combination therapy and they both give fewer emergency room visits and require less pain killers for the treatment of 5mm and 10mm ureteric stones.

INTRODUCTION

There are various diseases related to the urinary tract, but urolithiasis is the common one (1). Men are more affected by this disease than women (2). This disease has a lifetime commonness. The urinary tract is supposed to pass only liquid through that is urine but when stones are formed in the kidney, and they pass through the urinary tract it causes unbearable pain (3). Urinary tract stones are mostly found in the ureter and among them 2/3rd portion in the distal ureter (4). Urolithiasis is mostly treated with MET that is medical expulsive therapy (5). Different types of drugs are used to treat ureter smooth muscle in different ways which are stated as follows: Obstructing alpha 1 adrenergic which inducing vomiting i.e. peristalsis which causes stone expulsion by decreasing contraction of basal smooth muscle (6). Removal of ureteral stones is caused by increasing the pressure around the stone. Receptors that function in the ejaculation of stones are alpha 1 adrenergic receptor (7). An increase in stone removal rate decrease in stone ejaculation time is indicated by Tamsulosin (8). When stones are crashed this even worsens the situation due to obstruction of urine and many inflammatory reactions occur with mucosal edema (9). During the clinical trials, tamsulosin and silodosin which are specific alpha 1 blockers are commonly used because of their efficacy (10). The removal of kidney stones is a very painful process so easing the patient with ureteral relaxation is done by Tadalafil which is a PDE5 inhibitor (11). This inhibitor works by cueing the pathway of smooth muscles (12). So, this makes Tadalafil the first choice of urologists, and it has gained US Food and drug administration approval (13). Also, many studies are related to the amalgamation of many other drugs (14). So, this study is based on seeking the knowledge that whether combination therapy is better or Tamsulosin alone.

METHODOLOGY

This study was done at Ghulam Muhammad Mahar Medical college hospital Sukkur, Pakistan from February 2021 to July 2021**.** Permission was taken from the ethical review committee of the institute. Patients that were having stones of 5mm to 10mn were included in the study. Because these stones are detected easily through CT scans and ultrasound. Some patients were not included in the study due to the following reasons: Urinary tract infection, Ureteral surgery, Heart disease, High creatinine level, and pregnancy. Past studies have shown that two reference points were taken as P1 and P2 for sample size and it was calculated through the following formula: N = K×p1(1-p1) + p2(1-p2)÷(p1- p2)2. Where N= sample size, p1= successful passage in tadalafil and tamsulosin group, and p2=successful passage in the tamsulosin group. All the protocols of the study were followed such as taking the patient's permission. All the patient's information was taken such as Urine examination, Serum creatinine, and Clinical

examination. The stone was indicated by the largest dimension.

Patients were randomly divided into two groups each containing 86 persons. Prescription of tamsulosin of 0.3 mg and tadalafil of 8 mg was given to group A patients and 0.3mg, tamsulosin was prescribed to group B. Other drugs such as Hyoscine butyl bromide of 5 mg three times a day and Diclofenac of 100 mg three times a day was also prescribed in both groups. These drugs were continued until the stone was dispelled from the body. Continuation of drugs was for 3 weeks. But longer use of the drug doesn't need to shorter the removal period. Filtration of urine was done by taking fluids in large amounts. Then patients were examined for serum creatinine and for the stone size, whether it is decreased or is still present in its original shape. To clear the doubts CT KU was done. Removal of stone, the total dose of drugs, emergency visits, and side effects were recorded. If the stones were not removed after three weeks than semi rigid ureteroscopy was done. Categorical data was analyzed through the x2 test and student's t-test. The difference of P value was taken as less than 0.04. Data was analyzed by using SPSS version 22.

RESULTS

Out of 185 only 172 patients met the inclusion criteria, that were randomly divided into two groups. Due to some reasons 5 patients in group B couldn't continue the treatment 6 patients from both the groups needed early intervention and the remaining completed the study. The stone ejaculation rate was 78.0% in group A and 61.5% in group B. The stone ejaculation time was 1.55 vs. 2.22 weeks in group B. In 45 patients there was no stone ejaculation at the end of 3rd week of treatment. So these patients were treated with laser lithotripsy. A comparison study of two groups showed that group B has more episodes of flatulent pain than group A.

Table 1: Demographic and results of study participants

Parameter	Group A	Group B	P value
Mean age (Years)	32.75 ± 9.01	32.84 ± 10.00	
Mean stone size(mm)	7.42 ± 1.22	7.33 ± 1.12	
Expulsion rate %	63/80	50/78	
Mean expulsion time	1.65 ± 0.86	2.30 ± 0.75	
Mean analgesic use (mg)	402 ± 130	524 ± 86	
Mean no of colic episodes	2.01 ± 0.79	2.33 ± 0.66	
Mean no of emergency visit	1.47 ± 0.60	1.70 ± 0.58	

Table 2: Side effects in study participants

Variables	Group A	Group B	P value
Headache	9	7	0.61
Dizziness	8	6	0.46
Postural hypotension	3	2	0.80
Backache	10	6	0.40
Runny nose	2	1	0.91
Abnormal ejaculation	4	5	0.77

The average need for analgesia was more in group B than group A. the side effects of this drug were Runny nose, Headache, and Dizziness. Penile tumescence was indicated in 30 males of group A that remained for 25 to 35 minutes, but priapism was not indicated in any of them.

DISCUSSION

Among all the urological diseases, Urolithiasis is the general one. Ureteral stones are 1/5th among all the stones (15). Despite the complications related to ureteral stones, there have been many advancements in procedures used in treating these stones in the last decades (16). But on the other side, these procedures are not easy and financially reasonable. So, MET has become the first choice of urologists (17). Following are the factors that manipulate the ejaculation of stones spontaneously such as the number of stones, size of the stone, position and location of the stone, Structure of ureter, and inflammation (18). So medical treatment is needed to ease the smooth muscle during the removal of stone (19). Patients with distal ureteral stones are also treated with MET. Adrenoceptors such as alpha 1D and alpha 1A which was given by Sigala et al. Action of alpha 1A and alpha 1D is determined together through various studies (20). An antagonist i.e. tamsulosin gives an efficient ejaculation rate for medium-sized stones. For making a way for stone to pass easily Tadalafil acts via cueing pathway to ease smooth muscles (21). Among other drugs, tadalafil is found to be efficient. Also, its combined action with tamsulosin is quite good and it remains unaltered by meals. In comparing both the groups it is found that group B patients have low ejaculation rate than group A that is 61.5% vs. 78.01 % respectively. A combination of tamsulosin and tadalafil has shown that these drugs give more stone removal rate with less time 10.66 days which is shorter than 13.9 days of a study and can be compared with 10 days of a similar study (22, 23). Group A patients also shown fewer emergency room visits and also less requirement of pain killers. There were no worse side effects observed during the study. Past and related studies have also not shown any lethal side effects (22, 23).

CONCLUSION

It is found from this study that tamsulosin alone is less effective than tamsulosin and tadalafil combination therapy and they both give fewer emergency room visits and require less pain killers for the treatment of 5mm and 10mm ureteric stones.

Conflicts of Interest: No dispute was found by any other author.

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