ORIGINAL ARTICLE

Comparison efficacy of combined Tamsulosin and Allium Jesdianum versus Tamsulosin in treatment of renal colic and passage of urinary stones after Extracorporeal Shock Wave Lithotripsy (ESWL): a randomized clinical trial

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ABSTRACT

Aim: To compare efficacy of combined tamsulosin and hydrophilic extract of Allium Jesdianum versus tamsulosin in treatment of renal colic and passage of urinary stones after extracorporeal shock wave lithotripsy (ESWl).

Methods: In this study from March 2018 to June 2019 eighty Patients older than 18 years old with kidney and upper ureter stones sized less than 10 mm referred to urology clinic after receiving written informed consent form entered the study. After standard lithotripsy patients were assigned in two groups. In the first group after lithotripsy 0.4 mg tamsulosin was taken orally every night with a glass of water for 2 weeks. In second group in addition to tamsulosin, 1 gr of hydroalcholic extract of Allium Jesdianum divided totwo capsules was prescribed every 12 h for two weeks. Two weeks later, the patients were visited and KUB x-ray or ultrasound was performed and the change in stone size and the presence of residual stones was measured and recorded. All data were collected and analyzed using SPSS software version 21. P value level less than 0.05 was considered significant.

Results: The demographic characteristics of patients such as age, sex, stone location, mean size and number of stones were similar in two groups. The mean age of patients in control andintervention groups were 43.95± 12.99 and 42.71±13.37 year respectively (p>0.05).

the number of stones and the amount of pain in the intervention group (concomitant use of tamsulosin and extract of A.J) had significant difference with group of tamsulosin alone The mean pain score after treatment in both groups was 0.5 and 1.5 scale (VAS) (P=0.004)

Conclusion: this study showed that concomitant use of tamsulosin and aqueous extract of Allium Jesdianum without any significant side effects significantly reduces pain and increases the excretion of urinary stones in the kidneys and ureters after outpatient lithotripsy.

Keywords: Urinary stones, Allium Jesdianum, Tamsulosin, Treatment

INTRODUCTION

Urinary stones are the third most common disease of the urinary tract after urinary tract infections and prostate diseases. Its prevalence is more common in men (5-8%) and often in the 3th-6th decade of life[1,2]. In the last four decades, with the advent of lithotriptors, a great revolution has developed in the treatment of stones, however due to high rate of recurrence, intolerable and severe pain during passage of stones and severe complications and unilateral or bilateral renal failureneed to medical or herbal drugs for prevention and treatment of stones felt more and more[1,3,4,5].

One of the drugs used after stone lithotripsyto help passage of kidney and ureteral stones is oral tamsulosin, which is a specific inhibitor of alpha receptors and helps to excrete stones and reduce symptoms by relaxing the smooth muscles of the ureter; however, it has little effect on renal stones and can cause side effects in some patients[5,6,7].

The Allium Jesdianum is a flowering plant belonging to the lilaceae family that is native to Iran. This plant grows at altitudes of 1800-2600 meters[8]. The results of several studies show that intraperitoneal administration of hydroalcholic extract of Allium Jesdianumhas analgesic effects, which is reversed with naloxone[9]. Aim of this study was comparing efficacy of combined tamsulosin and hydrophilic extract of Allium Jesdianum versus tamsulosin in treatment of renal colic and passage of urinary stones after extracorporeal shock wave lithotripsy (ESWL).

MATERIALS AND METHODS

In this randomized clinical trial March 2018 to May 2019 eighty Patientsolder than 18 years old with kidney and upper ureter stones with sizebetween 6-10 mm referred to urology clinic after receiving written informed consent form entered the study.In all patients complete history and physical exam was taken and serum baseline tests, including PT, PTT, CBC, Hb, Na, K, kidney function tests (BUN, Cr) and a complete urine analysis and urine culture were checked in all of them. Patients with severe cardiovascular or pulmonary disease, coagulation disorders, uncontrolled hypertension, pregnant women, and those with contraindications to the use of analgesic or narcotic drugs or a history of herbal or medicinal allergies were excluded from the study.

In all patients, ultrasound and radiologicimaging of the stone were performed using DornierDelta 2 lithotriptor (Dornier MedTech, GmbH) machine and by standard technique with ultrasonic shock waves. After the outpatient stone lithotripsy, the patients were monitored for up to two hours. Patients were then assigned to two groups if they had no side effects. In both groups, it was recommended that drink 10 to 12 glasses of water daily. In first group after lithotripsy 0.4 mg tamsulosin capsule was taken every night witha glass of water for 2 weeks.

In group 2, in addition to every night 0.4 mg tamsulosin hydroalcholic extract of Allium Jesdianum prepared from Dena mountain, after determining herbarium number, dried in shadow and the extract preparing in form of capsule (both groups were provided from same company) with dose of 1 gr per day, divided one capsule every 12 h was prescribed after meal with a glass of water for two weeks. It is also recommended that they exercise for at least 30 minutes every day. Two weeks later, the patients were visited and KUB x-ray or ultrasound was performed and the amount of change in stone size and the presence of residual stones was measured and recorded. All data were collected and analyzed using SPSS software version 21. To analyze the findings, descriptive statistics tests including frequency, mean and standard deviation were used, then to compare groups with each other, chisquare and independent t-test were used. Pvalue level less than 0.05 was considered significant.

RESULTS

The demographic characteristics of patients such as age, sex, stone location, mean size and number of stones were similar in two groups (Table 1).

The mean age of patients in control group was 43.95 ± 12.99 year and mean age of the intervention group was 42.71±13.37 year, which did not show a significant difference between two groups.Also, in the control group (receiving of tamsulosin alone), 78.9% of the stones were in the kidney or kidney / ureter, which was 80% in the intervention group (group of tamsulosin and extract of Allium Jesdianum), and in this respect, there was no significant difference between two groups.

The results of our study showed that the number of stones and the amount of pain in the intervention group (concomitant use of tamsulosin and extract of A.J) had significant difference with group of tamsulosin alone (table2).

The mean pain score after treatment in both groups was 0.5 and 1.5 scale (VAS) (P=0.004)

Regarding efficacy of treatment in both group that means complete or partial clearance of urinary tract from stones in combined and tamsulosin group it was 77.1 and 60.5 percent respectively.

Table 1: Demographic characteristics of patients before treatment in two groups (intervention and control)

Group Variable	Tamsulosin control	Combined tamsulosin and allium Jesdianum (Intervention)	P value
Age	43.95±12.99	13.32±42.71	0.690
sex (female/male)	25/13	22/13	1
Stone numbers	2 (1-2)	2 (1-3)	0.489
Stone size (millimeter)	8.50±1.26	8.97±1.52	0.106
Pain intensity	2 (1-2)	2 (1-2)	0.435

Table 2: Baseline and post treatment variables of patients in two groups (intervention and control)

Variable	Baseline	After 2 weeks	P value	% change	P value
Stone number					
Control	2 (1, 2)	1 (1, 2)	0.000	-0.5 (-1, 0)	0.025
Intervention	2 (1, 3)	1 (0, 2)	0.003	-1 (-2, 0)	
Stone size					
Control	8.5 (8, 10)	5.5 (3, 8.25)	0.000	-3 (-5.25, 0)	0.207
Intervention	9 (8, 10)	4 (0, 9)	0.000	-4 (-7, -1)	
Pain					
Control	2 (1-2)	1.5 (1, 2)	0.000	0 (-1, 0)	0.004
Intervention	2 (1, 2)	0.5 (0, 1)	0.000	-1 (-2, -1)	

DISCUSSION

At present, people with urinary stones triesto pass stoneswith supportive methods (fluid consumption, mobility, acidic and alkaline solvent) or surgical methods (removal of obstruction, extracorporeal lithotriptors, prophylaxis, crushing the stone through the skin and open surgery[1,10,11,12].. Tamsulosin is used to help passage of kidney and ureteral stones after lithotripsy. It is a specific inhibitor of alpha receptors that helps passage of urinary stones and reduces symptoms by relaxing smooth ureter muscles[7,13,14,15].

With the clarification of side effects and harmful effects of chemical drugs, the issue of returning to herbal and natural medicines has come to the attention of researchers[16]. Our previous study in an animal model that induced stone by ethylene glycol showed that the alcoholic extract of Allium Jesdianum has analgesiceffect and help passage of urinary tract stones[8], so the aim of the present study was to investigate the effect of this plant extract on the renal colic and passage of urinary stones after extracorporeal lithotripsy.

In present study, the mean age of the control group was 43.95± 12.99 and the mean age of the intervention group was 42.71±13.32 years, which did not show a significant difference between the two groups. In addition, there was no significant difference between the initial data including the number and size of the stones and the amount of pain before treatment between the control and the intervention groups. Also, in the control group (receiver of tamsulosin alone), 78.9% of the stones were in the kidney or kidney / ureter, which was 80% in the intervention

group (receiver of tamsulosin and plant extract of Allium Jesdianum), and in this respect, there was no significant difference.

The results of our study showed that the number of stones and the amount of pain in the intervention group (concomitant use of tamsulosin and plant extract of Allium Jesdianum) significantly decreased compared to the control group (receiving tamsulosin alone).

In a study by Naja V et al. (2008), the effect of tamsulosin on stone clearance after ESWL was investigated and it was observed that tamsulosin facilitates the rate of stone clearance after ESWL and also reduces the severity of pain[14]. In another study by Qadri et al. (2014), the concomitant effect of tamsulosin, diclofenac, and tamsulosin on 5-20 mm stones was evaluated and it was observed that tamsulosin consumption after ESWL increased efficacy and reduces the need for narcotic drug and excretion time. In addition, tamsulosin has been shown to be more effective as the size of the stones increases[10].

Mehrabi et al. (2012) showed that Allium Jesdianum extract did not prevent the formation of kidney stones caused by ethylene glycol in male vistar rat and increased the deposition of calcium oxalate crystals in the kidneys, however, they suggested that this extract may be effective in the treatment of colic renal and kidney stone excretion due to its diuretic effects and camphor morphine compounds[8].

In another study, Khaksarian et al. (2008) showed that intraperitoneal administration of Allium Jesdianum extract has analgesic effects, and no side effects were observed in doses where Allium Jesdianum extract had analgesic effects. Also, the analysis of the constituents of hydroalcholic extract of Allium Jesdianum showed that there are substances such as morphine silrite, ethyl cinnamate, isoquinoline, and neomentol and long-chain alcohols in the extract [13]. Despite the fact that in a study by Mehrabi et al. (2012), Allium Jesdianum extract did not show a significant preventive effect on the formation of kidney stones caused by ethylene glycol [8].

However, the results of the present study showed that concomitant use of tamsulosin and Allium Jesdianum extract for two weeks significantly reduced the amount of pain, size and number of stones in the intervention group. furthermore, the reduction in pain and the number of stones in the intervention group compared to the control group was also significant, which indicates the positive effects of Allium Jesdianum extract in reducing pain and excretion of kidney stones.

Larry Govini et al. (2014) examined the anti-platelet aggregation effect of Allium Jesdianumethanolic extract on platelet aggregation induced by arachidonic acid and adenosine diphosphate and observed that this extract was able to inhibit platelet aggregation [16]. A study by Khaksarian et al. (2017) showed that essential oil and Allium Jesdianum extract inhibited platelet aggregation by inhibiting the enzyme cyclooxygenase 1, since cyclooxygenase enzyme is a producer of prostaglandin compounds, which are mediatorsof pain[17], in the present study; Allium Jesdianum extract was able to reduce the severity of pain by inhibiting the enzyme cyclooxygenase 1.

Other studies have shown that the extract of Allium Jesdianum plant improves the liver damage induced by acetaminophen by inhibiting oxidative / nitrostatic stress which may be due to its antioxidant properties and phenolic compounds. It seems that the plant extract, by increasing the antioxidant capacity and reducing the oxidants, has provided the conditions for more stones to be excreted[18].

The results of this study showed that concomitant use of tamsulosin and aqueous extract of Allium Jesdianum without any significant side effects significantly reduces pain and increases the excretion of urinary stones in the kidneys and ureters after outpatient lithotripsy.

CONCLUSION

The results of this study showed that concomitant use of tamsulosin and aqueous extract of Allium Jesdianum without any significant side effects significantly reduces pain and increases the excretion of urinary stones in the kidneys and ureters after outpatient crusher. Therefore, this extract can be used as an adjunctive treatment in addition to tamsulosin or in cases where the use of this drug is contraindicated as an existing treatment to improve urinary stone excretion.

Suggestions: It is recommended that the study be performed with a larger sample size, different doses of Allium Jesdianum and with a longer duration, especially in larger stones.It is also recommended that the study be performed on stones of different sizes and materials.

Investigation of the simultaneous effect of tamsulosin and extract of Allium Jesdianum plant on oxidant / antioxidant balance parameters after extracorporeal lithotripsy.

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