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ORIGINAL ARTICLE

# Efficacy and safety of tamsulosin vs. alfuzosin as medical expulsive therapy for ureteric stones

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**KEYWORDS**

Ureteric stones;
Medical expulsive therapy;
Tamsulosin;
Alfuzosin

**ABBREVIATIONS**

MET, medical expulsive therapy;
US, ultrasonography

**Abstract** ***Objective:*** To evaluate and compare the efficacy of tamsulosin and alfuzosin as medical expulsive therapy for ureteric stones.

***Patients and methods:*** In all, 112 patients with ureteric stones of ⩽10 mm, located along the ureter, were randomly divided into three groups. In group I, 32 patients received no α-blockers (controls), in group II 40 patients received tamsulosin 0.4 mg daily, and in group III 40 patients received alfuzosin 10 mg daily. All patients were given analgesia and antibiotics when indicated. The follow-up was weekly for 4 weeks.

***Results:*** The mean stone size and age were comparable in the three groups. The stone expulsion rate was 44%, 85% and 75% in groups I, II and III, respectively. Half of the stones in group II passed within 2 weeks, half in group III passed within 3 weeks, while more than half of the stones in group I did not pass even after 4 weeks. The mean number of painful episodes was 2.45, 1.38 and 1.64 in groups

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I, II and III, respectively. The drug-related side-effects reported by patients were mild and transient.

***Conclusion:*** The use of tamsulosin or alfuzosin as medical expulsive therapy for ureteric stones in the three sections of the ureter (upper, middle and lower) was safe and effective, as shown by the increased overall stone expulsion rate, reduced stone expulsion time and fewer pain episodes. Tamsulosin was associated with a greater rate of stone expulsion than was alfuzosin.



## Introduction

Urinary tract stones are one of the most common urological conditions worldwide. The prevalence is estimated to be 1–5% in Asia, 5–9% in Europe and 13% in the USA [1]. Ureteric stones represent one of the major causes for attendance at the emergency and outpatient departments in urology, and are associated with considerable morbidity.

Current therapeutic options for ureteric stones include active intervention and conservative 'watch and wait' approaches. Recent advances in endoscopic stone management have allowed upper tract stones to be treated using minimally invasive techniques, which have increased the success rates and decreased treatment-related morbidity. These advances include ESWL, ureteroscopy and percutaneous approaches. Although these procedures are less invasive than traditional open surgery they are more expensive and have inherent risks [2], but the surgical and anaesthetic risks are not negligible, and serious complications, although rare, are possible [3]. Thus, for many patients, a conservative treatment with no invasive procedures is an appealing option. However, watchful waiting does not always result in stone clearance and can be associated with recurrent renal colic [4].

The 2007 Guideline for the Management of Ureteral Calculi of the AUA [3], and the European Association of Urology guideline, recommend watchful waiting with medical treatment for patients with a stone of $< 10$ mm in diameter and with well-controlled pain.

Medical expulsive therapy (MET) has been investigated as a supplement to observation in an effort to improve spontaneous stone-passage rates, which can be unpredictable. Because ureteric oedema and ureteric spasm have been postulated to affect stone passage, these effects have been targeted by pharmacological intervention. Therefore, the primary agents that have been evaluated for MET are calcium-channel blockers, steroids, NSAIDs and α1-adrenergic receptor antagonists [2].

The human ureter contains α-adrenergic receptors along its length, with the highest concentration in the distal ureter. Three subtypes of α1 receptor have been described, i.e., α1a, α1b and α1d, with the last having the highest density in the distal ureter [5]. Stimulation of the receptors increases the force of ureteric contraction and the frequency of ureteric peristalsis, whereas antagonism of the receptors has the opposite effects. The α1-adrenoreceptor antagonists (α1-blockers) inhibit contractions of the ureteric musculature, reduce the basal tone, and decrease the peristaltic frequency and colic pain, facilitating the expulsion of ureteric stones [6].

The aim of the present study was to compare tamsulosin and alfuzosin for their efficacy and safety as MET in patients with a symptomatic uncomplicated ureteric stone that was located in one of the three sections of the ureter. We also assessed the effect of these two drugs in reducing the pain episodes in these patients.

## Patients and methods

This was a prospective randomised controlled trial. The inclusion criterion was a symptomatic ureteric stone of $< 10$ mm in diameter. The exclusion criteria were acute infection, a solitary kidney, elevated levels in renal functional tests at presentation, severe hydronephrosis, bilateral ureteric stones, pregnancy or lactation, current use of α-blockers, calcium-channel blockers or steroids, age $< 18$ years, and any allergic reaction to the study medication.

The study was conducted between July 2012 and December 2012, and was approved by the Department of Surgery and authorities of the Mosul College of Medicine. In all, 112 patients fulfilled the above criteria and completed the follow-up. All of the eligible patients had signed an informed consent.

At the initial visit the patients had a complete history taken, a physical examination, urine analysis, and blood urea nitrogen and serum creatinine levels were measured. All patients were assessed with urinary ultrasonography (US) and a plain abdominal X-ray. IVU or CT was used in a few patients depending on specific indications.

### *Study design*

In consultation with a statistician, the sample size was scheduled to be 50 patients in each of three groups, taking into consideration previous similar studies, and the