

MONITORING RESPONSE TO TREATMENT AFTER ACUTE UNILATERAL URETERAL OBSTRUCTION BY FUNCTIONAL MRI

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Introduction & Objectives: The relaxation rate R2* is a magnetic resonance-specific tissue parameter which can be determined by blood oxygenation level-dependent (BOLD) MRI. R2* is related to the tissue content of deoxyhaemoglobin which in turn is negatively related to the pO2 of blood. Thus, R2* is considered to provide an indirect estimation of pO2. The aim of this study was to prospectively determine whether BOLD MRI is able to assess changes in intrarenal oxygenation before and after release of acute unilateral ureteral obstruction.

Material & Methods: Ten male patients with a median age of 44 years (range 20-73 years) with acute unilateral flank pain due to a distal ureteral calculus diagnosed by unenhanced computed tomography underwent BOLD MRI of the kidneys at admission to the hospital and at a median time of 3 months (range 1 to 6 months) after release of the ureteral obstruction by successful stone treatment. Total examination time including 3 morphological sequences was 12 to 15 minutes. Circular regions of interest (ROIs) were delineated on the R2* maps for cortex and medulla, respectively. Statistical analysis was performed by the Wilcoxon signed rank test for paired samples comparing the affected with the unaffected kidney during acute ureteral obstruction and after release of ureteral obstruction by successful stone treatment.

Results: During acute obstruction, R2* was significantly lower in the medulla (p=0.004) and in the cortex (p=0.004) of the affected kidney compared to the contra lateral unaffected kidney indicating increased oxygenation levels during obstruction. After release of ureteral obstruction, R2* increased significantly in all patients from 11.0±2.0 to 16.1±0.9 in the medulla (p=0.004) and from 10.4±0.7 to 12.2±0.8 in the cortex (p=0.004) to values similar to those found in the unobstructed kidneys. Thus, following release of acute unilateral ureteral obstruction, the oxygenation of the obstructed kidney turned back to normal.

Conclusions: These preliminary results suggest that BOLD MRI has the potential to non invasively assess changes in oxygenation of the kidneys during acute ureteral obstruction and its normalisation after successful treatment. Thus, this method might be helpful to non invasively monitor the response to treatment and to determine the need of further intervention in patients with acute ureteral obstruction.

LACK OF EFFICACY OF TAMSULOSIN IN THE TREATMENT OF DISTAL URETERAL STONES

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Introduction & Objectives: alpha-blockers induce selective relaxation of ureteral smooth muscle with subsequent inhibition of ureteral spasms and dilatation of the ureteral lumen. The aim of the study was to evaluate the efficacy of the alpha-blocker tamsulosin (T) in patients with ureteral colic due to distal ureteral stone.

Material & Methods: This was a multicentre, placebo-controlled, randomized, double-blind study. Patients had to meet the following criteria: age >18 years, emergency admission for ureteral colic, radiopaque distal ureterolithiasis of 2-7 mm diameter. They daily received T (0.4 mg) or matching placebo (P) until stone expulsion or day 42. Main endpoint (censored) was time to stone expulsion between inclusion and day 42. Statistical analysis was performed using a sequential method, the triangular test

Results: 129 patients were randomized: P: 63, T: 66. Seven patients were excluded from analyses: 2 and 3 for major deviations from inclusion criteria in P and T groups, respectively, and 1 for stone expulsion before 1st treatment administration, and 1 for consent withdrawal, both in T group. The study was stopped after the 6th analysis on 120 patients. The final analysis was performed on 122 patients (overrunning). At inclusion, there was no significant difference between groups except for gender with 9 (14.8%) and 18 (29.5%) women in P and T groups, respectively (p=0.05). Mean±standard-deviation of stone diameters were 3.2±1.2 and 2.9±1.0 mm in P and T groups, respectively (p=0.23). Expulsion delay distributions over 42 days did not show any difference (p=0.30, final analysis). The numbers of patients who spontaneously expelled their stone within 42 days were 43 (70.5%) and 47 (77.0%) in P and T groups, respectively (p=0.41) and corresponding delays were 10.1±10.0 and 9.6±9.8 days. Other secondary endpoints and tolerance were not different between groups

Conclusions: A daily administration of 0.4 mg of T does not accelerate the expulsion of distal ureteral stones in patients with ureteral colic

SECOND CYCLE OF MEDICAL EXPULSIVE THERAPY WITH TAMSULOSIN IN PATIENTS NON RESPONDERS TO A FIRST CYCLE FOR DISTAL URETERAL STONES: RESULTS OF A PROSPECTIVE RANDOMISED TRIAL

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Introduction & Objectives: To evaluate safety and efficacy of a second cycle of medical expulsive therapy with tamsulosin in patients non responders to a first cycle with tamsulosin and deflazacort for uncomplicated distal ureteral stones.

Material & Methods: Between June 2006 and September 2007, 91 patients treated without success with a first cycle of medical expulsive therapy (tamsulosin 0.4 mg + deflazacort 30 mg for 10 days) for symptomatic distal ureteral stones (size >5 mm) were enrolled in a randomized prospective study to evaluate the role of a second cycle with tamsulosin alone (for 10 days) to improve stone expulsion and to prevent ureteroscopy or ESWL treatment. Informed consent was required. Patients were divided in two groups: Group A (46 patients) received a second cycle of tamsulosin (0.4 mg daily), Group B (45 patients) received no further therapy. Both groups were instructed to drink two litres of water daily and to use analgesics (100 mg Diclofenac) if renal colic occurred. The duration of the therapy was 10 days. In case of therapy failure, the patients underwent ureteroscopy and stone lithotripsy. For each patient the following variables were recorded: age, gender, stone size, time to stone expulsion, number of acute colics during treatment, analgesic use, WBC, C reactive protein (CRP), serum creatinine (before and after therapy) and side effects. The primary endpoint of the study was stone expulsion rate. Secondary endpoints were: safety, analgesic use, number of acute renal colics, changes in WBC, CRP and serum creatinine. A statistical analysis was carried out using chi-square and Fisher's exact tests.

Results: The groups were comparable in terms of age, gender and stone size. Stone size was 5.93 ± 0.95 mm for Group A and 6.3 ± 0.81 mm for Group B. The expulsion rate was significantly higher in Group A (80.4%) than in Group B (48.9%) (p<0.01). 9 patients in Group A (19.6%) and 23 in Group B (51.1%) did not pass the stone within 10 days and underwent ureteroscopy. The mean number of acute renal colics was 1.39 ± 1.12 in Group A and 1.12 ± 1.04 in Group B (p>0.05). The analgesic use (diclofenac i.m.) was 122.7 ± 101 mg in Group A and 127.4 ± 95 mg in Group B (p>0.05). No side effect of medical therapy was observed in both Groups.

Conclusions: A second cycle of medical expulsive therapy with tamsulosin in non responders to a first cycle with tamsulosin and deflazacort is safe and effective and therefore should be considered as an option in the management of uncomplicated distal ureteral stones.

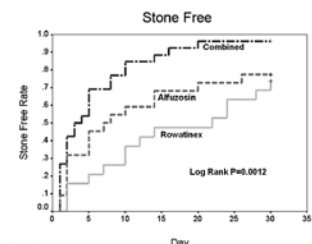
PROSPECTIVE STUDY COMPARING ROWATINEX, ALFUZOSIN AND TREATMENT WITH BOTH FOR LOWER URETERAL STONES

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Introduction & Objectives: Conservative treatment of lower ureteral stones is a preferred option for small non obstructing or impacted stones. We conducted this three armed prospective study to compare the stone expulsion rate of patients treated with either Rowatinex ; Alfuzosin or both

Material & Methods: Between the years 2004-2007, 67 patients (average and mean age 44 and 43 years, 55 men, 12 women) diagnosed with lower ureteral stones were prospectively recruited. Institutional review board approved the study. All patients signed an informed consent. Patients were assigned to one of 3 study arms (12 capsules of Rowatinex [Pinene 31%, Camphene 15%, Borneol 10%, Ayhenol 4%, Fenchone 4%, Cineol 3%] a day; Alfuzosin 10 mg a day, and a combined treatment with both). To procure the stone patients were ordered to urinate through a net. Each patient was followed for one month or until stone expulsion. Confirmation for stone status at the end of follow-up was done by the imaging utility that diagnosed the stone. Using student T test we found patients treated with Rowatinex had significantly smaller stones than patients treated with Alfuzosin. No other significant differences between the study arms were found (table 1). Kaplan Meier curves and Log rank analysis compared between the study arms. Cox regression analysis allowed identification of different factors associated with stone expulsion rate (Age, sex, stone location, stone size, and type of pharmaceutical treatment). A P value of 0.05 or less designated statistical significance.



Results: Stone expulsion rate was 84% at one month (56 patients). Kaplan Meier curve (Figure 1) demonstrated a significant better stone expulsion rate in the combined treatment arm (log rank test P=0.002). Multivariate analysis found only the type of pharmaceutical treatment and stone size to be associated with a stone expulsion event (Cox regression analysis; P=0.003 and P=0.015 respectively)

Arm	N	Sex	Age	Size [mm]	Expulsion Event (%)	Expulsion Day
Rowatinex	19	M16 F 3	43 (42)	1.9 (2)	14 (74%)	13.7 (11)
Alfuzosin	22	M20 F 2	44 (44)	3.3 (3)	17 (77%)	7.4 (5)
Combined	26	M19 F 7	45 (44)	2.7 (3)	25 (96%)	5.2 (3)

[M-male, F-female; age, size and expulsion day- average (median)]

Conclusions: Combined treatment with Alfuzosin and Rowatinex is more effective in achieving lower ureteral stone expulsion than treatment with only one drug. Further studies are needed to compare this combination treatment in larger populations.