STONE DISEASE

Nifedipine versus tamsulosin for the management of lower ureteral stones

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Purpose: We evaluate and compare the effectiveness of 2 different medical therapies during watchful waiting in patients with lower ureteral stones.

Materials and Methods: A total of 86 patients with stones less than 1 cm located in the lower ureter (juxtavesical or intramural tract) were enrolled in the study and were randomly divided into 3 groups. Group 1 (30) and 2 (28) patients received daily oral treatment of 30 mg deflazacort, (maximum 10 days). In addition group 1 patients received 30 mg nifedipine slow-release (maximum 28 days) and group 2 received 1 daily oral therapy of 0.4 mg tamsulosin (maximum 28 days), Group 3 patients (28) were used as controls. Statistical analyses were performed using Student's test, ANOVA test, chi-square test and Fisher's exact test.

Results: The average stone size for groups 1 to 3 was 4.7, 5.42 and 5.35 mm, respectively, which was not statistically significant. Expulsion was observed in 24 of 30 patients in group 1 (80%), 24 of 28 in group 2 (85%) and 12 of 28 in group 3 (43%). The difference in groups 1 and 2 with respect to group 3 was significant. Average expulsion time for groups 1 to 3 was 9.3, 7.7 and 12 days, respectively. A statistically significant difference was noted between groups 2 and 3. Mean sodium diclofenac dosage per patient in groups 1 to 3 was 19.5, 26, and 105 mg, respectively. A statistical significant difference was observed between groups 1 and 2 with respect to group 3.

Conclusions: Medical treatments with nifedipine and tamsulosin proved to be safe and effective as demonstrated by the increased stone expulsion rate and reduced need for analgesic therapy. Moreover medical therapy, particularly in regard to tamsulosin, reduced expulsion time.

Editorial Comment

A number of trials have demonstrated the utility of pharmacologic therapy in promoting spontaneous ureteral stone passage and in reducing the time for and pain associated with stone expulsion. The efficacy of calcium channel blockers (nifedipine) in conjunction with corticosteroids has now been proven in several prospective, randomized clinical trials, and recently the combination of an alpha-1 receptor antagonist (tamsulosin) and a corticosteroid has likewise demonstrated benefit in the medical management of distal ureteral calculi. Propiglia and colleagues performed a head-to-head comparison of the 2 medical regimens (nifedipine/deflazacort versus tamsulosin/deflazacort) compared with a control, no-treatment arm and found that both treatment groups demonstrated a significantly higher rate of stone expulsion, a shorter time to spontaneous passage (only the tamsulosin arm was statistically significant compared with control) and a reduced need for analgesics.

Although adverse effects associated with the use of nifedipine and tamsulosin are low, all trials involving these drugs have reported a small number of patient drop-outs as a result of perceived side effects from the medication. Given the perhaps greater potential for problems due to nifedipine compared with tamsulosin, as well the proven benefit of the tamsulosin regimen in reducing time to stone passage, the combination of tamsulosin/corticosteroid may provide the best chance of spontaneous passage for distal ureteral stones. It remains to be seen if pharmacological therapy will prove to be as effective in promoting the spontaneous passage of stones located in the middle and proximal ureter as well as stones in the distal ureter. Furthermore, these studies have not separated the effect of the corticosteroid from that of the calcium channel blocker or alpha-1 blocker. Hopefully, future study will define the role of each agent in reducing symptoms and promoting

stone passage. However, for now, there is ample evidence supporting the use of these agents in appropriate patients with < 1 cm distal ureteral stones.

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Metabolic risk factors and the impact of medical therapy on the management of nephrothiasis in obese patients

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Purpose: Previous studies have demonstrated that obesity can increase the risk of stone formation as well as recurrence rates of stone disease. Yet appropriate medical management can significantly decrease the risk of recurrent stone disease. Therefore, we analyzed our obese patient population, assessing the risk factors for stone formation and the impact of selective medical therapy on recurrent stone formation.

Materials and Methods: A retrospective chart review was performed to identify obese patients with stone disease from our Stone Center. Metabolic risk factors for stones were identified as well as patient response to medical therapy. A similar analysis was performed on a group of age and sex matched nonobese stone formers.

Results: Of 1,021 patients 140 (14%) were identified as obese (body mass index greater than 30). Of these patients complete metabolic evaluations were available in 83 with an average follow-up of 2.3 years. The most common presenting metabolic abnormalities among these obese patients included gouty diathesis (54%), hypocitraturia (54%) and hyperuricosuria (43%), which presented at levels that were significantly higher than those of the nonobese stone formers ($p < 0.05$). Stone analysis was available in 32 obese patients with 63% having uric acid calculi. After initiating treatment with selective medical therapy obese and nonobese patients' demonstrated normalization of metabolic abnormalities, resulting in an average decrease in new stone formation from 1.75 to 0.15 new stones formed per patient per year in both groups.

Conclusions: Obesity, as a result of dietary indiscretion, probable purine gluttony and possible type II diabetes, appears to have a significant role in recurrent stone formation. Appropriate metabolic evaluation, institution of medical therapy and dietary recommendations to decrease animal protein intake can significantly improve the risk of recurrent stone formation in these often difficult to treat patients.

Editorial Comment

With an increase in the proportion of obese individuals, interest in medical evaluation and treatment of problems unique to or overrepresented in this patient population has expanded. Stone disease is no exception, and the unique challenges posed by the surgical treatment of morbidly obese individuals have encouraged efforts to reduce the risk of stone occurrence. Ekeruo and colleagues reviewed the outcomes of medical evaluation and treatment of 83 obese stone formers at an average follow-up of 2.3 years, and found that gouty diathesis, hypocitraturia and hyperuricosuria were the most common metabolic abnormalities identified, and that these abnormalities were more pronounced than those identified in a group of matched non-obese stone formers. Moreover, uric acid stone composition was overrepresented in this patient group (63%) compared with the non-

obese group in whom uric acid stones comprised only 11% of stones. Some of these finding are expected based solely on overindulgent eating patterns (elevated urinary calcium, uric acid and oxalate). However, the finding of low urine pH is particularly interesting given the recent report showing that insulin resistance (commonly seen in obese patients) is associated with a defect in ammoniagenesis, thereby leading to an acid urine and subsequent promotion of uric acid stones (1). Although a high acid ash diet (from overindulgence in animal protein) can itself cause a decrease in urinary pH, the findings seen above persisted even when patients were maintained on a controlled metabolic diet, suggesting that the effect is, at least in part, diet-independent.

Of note, the initiation of directed medical and dietary therapy aimed at correcting the underlying metabolic abnormalities resulted in normalization of urinary parameters and a reduction in the rate of stone formation. As such, metabolic evaluation and medical and dietary therapy should be encouraged in these patients, with a good expectation of reduced stone recurrence and consequently less frequent need for surgical intervention.

REFERENCE

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ENDOUROLOGY & LAPAROSCOPY

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