STONE DISEASE

Efficacy of tamsulosin in the medical management of juxtavesical ureteral stones

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J Urol. 2003; 170: 2202-5

Purpose: We evaluated the efficacy of the alpha1-adrenergic antagonist tamsulosin for conservative expulsive therapy in patients with ureteral colic due to juxtavesical stones.

Materials and Methods: A total of 60 consecutive symptomatic patients with stones located in the juxtavesical tract of the ureter were randomly divided into group 1-30 who received oral floroglucine-trimetossibenzene 3 times daily and group 2-30 who received 0.4 mg tamsulosin daily. The 2 groups received 30 mg deflazacort daily for 10 days plus cotrimoxazole 2 times daily for 8 days and 75 mg diclofenac injected intramuscularly on demand. Ultrasound followup and medical visits were performed weekly for 4 weeks. Stone passage rate and time, analgesic use, hospitalization and endoscopical intervention were evaluated. Statistical analysis was performed using the Student t test.

Results: The stone expulsion rate was 70% for group 1 and 100% for group 2. Mean stone size was 5.8 and 6.7 mm, respectively ($p = 0.001$). Mean expulsion time was 111.1 hours for group 1 and 65.7 hours for group 2 ($p = 0.020$). The mean number of diclofenac injections was 2.83 for group 1 and 0.13 for group 2 ($p < 0.0001$). Ten group 1 patients were hospitalized, of whom 9 underwent ureteroscopy, compared with none in group 2 ($p < 0.0001$ and 0.001, respectively).

Conclusions: Tamsulosin used as a spasmolytic drug during renal colic due to juxtavesical calculi increased the stone expulsion rate and decreased expulsion time, the need for hospitalization and endoscopic procedures, and provided particularly good control of colic pain.

Editorial Comment

The likelihood of spontaneous passage of stones in the ureter depends primarily on the size and location of the stone at the time of diagnosis. Although most ureteral stones pass spontaneously, the pain and cost associated with repeated episodes of renal colic is substantial. A number of investigators have evaluated the use of pharmacologic agents to enhance the rate and reduce the pain of spontaneous passage of ureteral calculi and demonstrated a beneficial effect of some medications (references 4 and 6 in the article). The efficacy of corticosteroids and calcium channel blockers has been attributed to their ability to reduce ureteral edema and spasm.

In the current study, Dellabella and colleagues theorized that the use of an alpha-adrenergic antagonist would reduce ureteral peristalsis around an obstructing ureteral stone, thereby increasing urine flow and improving the likelihood of spontaneous passage. In a prospective, randomized trial, these investigators compared tamsulosin with an anti-spasmotic agent (floroglucine-trimetossibenzene) in 60 patients with stones in the intramural ureter. After 4 weeks, all patients in the tamsulosin group successfully passed their stones compared with only 70% in the anti-spasmotic group. Furthermore, patients in the tamsulosin group passed their stones in less time (66 hours vs. 111 hours, respectively) and required less pain medication (0.13 vs. 2.83 injections diclofenac, respectively) than the anti-spasmotic group.

These findings again suggest that pharmacotherapy aimed at decreasing ureteral peristalsis associated with an obstructing stone can reduce pain and enhance spontaneous stone passage. Although few adverse effects from drug therapy have been reported in the current and previous trials, one must still weigh the risks of pharmocotherapy against the benefit of spontaneous stone passage for each patient. The efficacy of alpha-blocker therapy for the management of ureteral stones will need to be confirmed in future trials; however, the

use of adjunctive drug therapy in patients electing to manage their ureteral stones conservatively should be considered.

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Urinary stone size: comparison of abdominal plain radiography and noncontrast CT measurements

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J. Endourol. 2003; 17: 725-8

Background and Purpose: To compare urinary stone size as measured by abdominal plain radiography (AXR) with stone size as measured by noncontrast three-dimensional spiral CT in patients with acute renal colic.

Patients and Methods: Patients presenting to the emergency room of a single institution with urinary stones that were visible on both AXR and noncontrast spiral CT were identified. Two radiologists blinded to the clinical outcomes separately and randomly reviewed all films and measured maximum longitudinal (craniocaudal) and transverse (anteroposterior) stone diameters. The two-tailed paired Student's t-test was used to compare the sizes of each stone on AXR and CT.

Results: Over a 1-year period, 22 patients were identified with a total of 31 urinary stones visible on both AXR and CT. Nineteen stones were located in the kidney, three in the midureter, and nine in the distal ureter. The mean stone size by AXR was 6.1 mm (range 2-13 mm; SD +/- 1.95) in the longitudinal axis and 5.3 mm (range 2-11 mm; SD +/- 1.50) in the transverse axis. The mean stone size by CT was 6.9 mm (range 3-12 mm; SD +/- 1.95) in the longitudinal axis and 6.1 mm (range 2-11 mm; SD +/- 1.50) in the transverse. The differences between AXR and CT measurements did not attain significance in either the longitudinal ($p = 0.67$) or the transverse ($p = 0.25$) axis.

Conclusions: A CT scan provides estimates of stone size that are consistently greater than those of AXR in both the longitudinal and transverse axes. However, for stones between 2 and 13 mm in maximum diameter, these differences do not attain significance. In patients with a history of radiopaque stones in this size range, therefore, AXR may provide useful size data for clinical decision-making without concern about significant disparities between the two modalities. As AXRs are more expeditiously obtained, incur less direct costs, and expose patients to significantly lower doses of radiation than CT scans, they remain a useful adjunctive study in the work-up of nephrolithiasis.

Editorial Comment

It is clear that CT is the most sensitive imaging modality for the detection of renal and ureteral calculi. However, the accuracy of CT compared with abdominal radiography for the measurement of stone size has been debated. A previous report suggested that CT overestimated the craniocaudad dimension of ureteral stones by a mean of 0.8 mm. In contrast the current report by Parsons and colleagues found concurrence between CT and abdominal x-ray (AXR) for both the transverse and longitudinal dimensions, although the measurements were consistently longer (but not statistically significantly so) by CT. Speculation that CT overestimates the longitudinal dimension as a result of volume averaging failed to hold true in this prospective comparison.

Although follow-up imaging after CT diagnosis of stones is best done with AXR from a cost-effective and radiation exposure standpoint, this study suggests that the CT estimate of stone size may reliably be used to make treatment decisions regarding renal and ureteral stones. Conversely, using CT as the gold standard for stone measurement as suggested by in vitro studies (reference 6 and 7 in the article), AXR provides a comparable measure of stone size and may likewise be used for treatment decision-making.

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ENDOUROLOGY & LAPAROSCOPY

Predictive factors for applicability and success with endoscopic treatment of upper tract urothelial carcinoma

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J Urol. 2003; 170: 2209-16

Purpose: We report on endoscopic treatment outcomes for upper tract urothelial carcinoma and identify predictive factors for success.

Materials and Methods: A total of 61 renal units were referred for endoscopic treatment of an upper tract tumor, 69% of which did not have a traditional indication for nephron sparing approaches. Tumor pathology and operative findings were assessed retrospectively for treatment outcomes and influential factors.

Results: Initial ureteroscopic inspection was undertaken in 53 renal units with resection attempted in 18 (34%) resulting in an 89% success rate with 16 treated. A percutaneous approach in 19 renal units (11 after ureteroscopy) was 100% successful in achieving tumor-free status, for a total of 35 renal units successfully treated endoscopically. Surveillance then began on 27 renal units with a recurrence rate of 88% and mean time to recurrence of 5.8 months (range 2 to 20). Of patients undergoing surveillance (31% of whom had high grade disease), 54% remain or have died of unrelated disease, during a mean followup of 21.0 months (range 3 to 48). Higher tumor grade, larger size, renal pelvis location (all $p < 0.01$) and multifocality ($p = 0.05$) significantly correlated with decreased recurrence-free survival, but did not predict failure of local control by endoscopic surveillance.

Conclusions: Although endoscopic techniques can render most patients tumor-free, there is a high associated recurrence rate and many need repeat procedures. Recurrence-free survival is greater in patients with low grade, solitary or less bulky disease. However, rigorous surveillance after endoscopic resection can lead to success even in patients with high grade, multifocal or large volume disease, resulting in preservation of renal units.

Editorial Comment

Among a heterogeneous population of patients with upper tract urothelial carcinoma, two-thirds of whom did not have a traditional indication for renal preservation; tumor size was the most important factor in deciding whether or not to attempt endoscopic resection. Although disease recurrence is increased with higher grade, larger, multifocal or renal pelvic location, once the tumor is resected these factors do not significantly influence whether or not recurrences can be successfully managed with endoscopy. Over half of the patients