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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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

who elected to enter surveillance were able to maintain their kidney and avoid extirpative surgery. The price for this is high, in terms of repeated procedures, but motivated patients benefit. The take home message is that even in the presence of high grade, multifocal or large volume disease, kidneys can be preserved.

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Evaluation of synchronous twin pulse technique for shock wave lithotripsy: determination of optimal parameters for in vitro stone fragmentation

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Purpose: The Twinheads extracorporeal shock wave lithotriptor (THSWL) is composed of 2 identical shock wave generators and reflectors. One reflector is under the table and the other is over the table with a variable angle between the axes of the 2 reflectors. The 2 reflectors share a common second focal point, making it possible to deliver an almost synchronous twin pulse to the targeted stone. We studied the optimal parameters for in vitro stone fragmentation.

Materials and Methods: Two types of 1 cm artificial stones were used, namely Bon(n)-stones of 3 compositions (75% calcium oxalate monohydrate [COM] plus 25% uric acid, struvite and cystine) and plaster of Paris. The parameters tested were shock wave number (100, 500 and 1,000), shock wave power (8, 11 and 14 kV) and angle between the reflector axes (67, 90 and 105 degrees). After the optimal parameters were determined, we studied the disintegrative efficacy of THSWL for 3 types of human urinary calculi, including COM, calcium hydrogen phosphate (brushite) and cystine. Each stone received 1,000 twin shock waves at 14 kV with an angle of 90 degrees between the reflectors. All experiments were done using a rate of 60 twin shock waves per minute. Following lithotripsy stone fragments were processed and sized. The ratio of the weight of fragments greater than 2 mm-to-total weight of all fragments was calculated.

Results: Optimal stone fragmentation results for THSWL were obtained with the maximum number of shock waves (1,000) and full power (14 kV). There was no significant statistical difference in fragment size or the ratio of fragments greater than 2 mm with the use of different angles except for cystine and plaster of Paris calculi, for which the right angle was most effective. At application of the optimal parameters to human stones THSWL produced small fragment size for COM and cystine stones, while brushite stones were not fragmented to the same extent.

Conclusions: The efficacy of synchronous twin pulse technology improves as the number of shock waves and power increase. A 90-degree angle between the shock wave reflectors is advantageous for certain

stones (that is cystine and plaster of Paris) but it is not a factor for other stone compositions. THSWL has satisfactory disintegrative efficacy for human stones, especially COM and cystine calculi.

Editorial Comment

There are currently 2 dual-head lithotriptors available: the Twinheads (FMD) and the Duet (Direx). In this study, the Twinheads was used to fragment 4 types of artificial stones and 3 types of human urinary calculi. The results of dual head lithotripsy were intriguing, although the assessment of any superiority of this type of lithotripsy over other types is only through comparison of these results to those in other studies (using methods similar to the ones in this study, by many of the same investigators, brushite stones were found to be resistant to several standard lithotriptors while these same stones fragmented well with dual head lithotripsy). It is not clear if any advantage of lithotripsy with the Twinheads machine owes to the same cavitation bubble interaction investigated by Zhong and associates (1) in their studies of dual lithotripsy. Moreover, the other dual head lithotriptor currently available (Duet, from Direx) can be set to either synchronous or asynchronous firing, and thus might provide different results. It remains to be seen if dual head lithotriptors will prove better, in terms of either efficacy or safety, than standard ones, but dual lithotripsy might well be the next big thing in shock wave lithotripsy.

Reference

1. Zhong P, Cocks FH, Cioanta I, Preminger GM: Controlled, forced collapse of cavitation bubbles for improved stone fragmentation during shock wave lithotripsy. J Urol. 1997; 158: 2323-8.

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IMAGING

Radiologic features of Castleman's disease occupying the renal sinus

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Objective: Our purpose was to describe the radiologic findings in five abnormalities in three patients with Castleman's disease occupying the renal sinus.

Conclusion: Common findings such as mild homogeneous enhancement passing through the mass of the collecting system with mild hydronephrosis on contrast-enhanced CT and hypointense signal on T2-weighted images were obtained. Castleman's disease may be considered in a differential diagnosis of a mass occupying the renal sinus, although it is difficult to differentiate from malignant lymphoma.

Abstract Edited

Purpose: To describe the radiologic findings in five abnormalities in three patients with Castleman's disease occupying the renal sinus.