Conclusions: In addition to facilitating ureteroscopic access, reducing costs, and lowering intrarenal pressures, the results of the current study suggest that UASs improve SFRs during the management of renal calculi. It is now our current practice to use the UAS routinely during ureteroscopic treatment of renal and upper ureteral calculi.

Editorial Comment

Although the concept of the ureteral access sheath is not new, a recent redesign has resulted in a safer, more user-friendly and versatile product. A number of advantages have been demonstrated with use of the ureteral access sheath, including the ability to repeatedly access the upper tract and a reduction in intrarenal pressures. These benefits alone support the use of a ureteral access sheath in select cases. However, an advantage with regard to stone free rates has not been clinically demonstrated, despite the obvious benefit that stone fragments can be manually removed.

In this retrospective study, L'Esperance and colleagues compared 256 cases of ureteroscopic management of renal calculi with or without a ureteral access sheath and determined that overall stone free rates were higher with (79%) than without (67%) the access sheath. When stratified by location in the collecting system, stone free rates were higher in all locations with the access sheath, although the differences did not reach statistical significance. Interestingly, despite higher stone free rates with use of the access sheath, no attempt was made to manually remove fragments after intracorporeal lithotripsy. Thus flow dynamics associated with the access sheath must encourage passage of fragments from the kidney. An obvious study of interest would be one in which every attempt is made to manually retrieve fragments from the kidney via the access sheath.

This study suffers from the usual limitations of a retrospective series, in that selection bias with regard to patient selection may come into play and the fastidiousness with which the stone is treated could be affected by use of the access sheath. However, the results of this study are encouraging; now, a prospective randomized trial should be performed to confirm these findings. For now, use of a ureteral access sheath may be advantageous not only for lengthy and complex ureteroscopic cases, but perhaps for routine cases as well.

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IMAGING

Prostatic biopsy directed with endorectal MR spectroscopic imaging findings in patients with elevated prostate specific antigen levels and prior negative biopsy findings: early experience

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Purpose: To prospectively evaluate the accuracy of transrectal ultrasonography (US)-guided biopsy directed with magnetic resonance (MR) spectroscopic imaging in patients with an elevated prostate specific antigen (PSA) level and negative findings at prior biopsy by using subsequent biopsy results as the reference standard.

Materials and Methods: The committee on human research approved this study, and written informed consent was obtained. MR imaging and MR spectroscopic imaging were performed in 42 men (age range, 45-75 years; average age, 63.3 years; median age, 65 years) with negative findings at two or more prostatic biopsies and at digital rectal examination. MR spectroscopic data were rated on a scale of 1 (benign) to 5 (malignant) on the basis of standardized metabolic criteria. Abnormal voxels were overlaid on the corresponding transverse transrectal US images and used to perform voxel-guided biopsy of the prostate. All patients subsequently received an extended-pattern biopsy scheme.

Results: Thirty-one of 42 patients demonstrated metabolic abnormalities that were suspicious for cancer (voxels with scores > or = 4). Eleven patients with negative MR spectroscopic imaging results also had negative biopsy findings. Cancer was detected in 17 (55%) of 31 men with positive MR spectroscopic imaging findings (voxels with scores > or = 4) with a sensitivity of 100%, specificity of 44%, positive predictive value of 55%, negative predictive value of 100%, and accuracy of 67%. In men with at least one spectroscopic voxel with a score of 5 (12 of 17 men), the sensitivity, specificity, positive and negative predictive values, and accuracy were 71%, 84%, 75%, 81%, and 79%, respectively.

Conclusion: Metabolic data from MR spectroscopic imaging can be transferred to transrectal US images and used to sample regions of cancer in men with rising PSA levels and negative findings at prior biopsy with good accuracy.

Editorial Comment

Despite new biopsy strategies with increased number of cores, many men find themselves in the clinical dilemma of having an elevated or rising PSA level and at least one prostatic biopsy with negative findings. MR spectroscopy is a new technology useful in the evaluation of prostate cancer (localization of cancer to a sextant of the prostate, the estimation of extracapsular extension and the assessment of its aggressiveness). Specifically, MR spectra from regions of prostate cancer show a significant reduction or absence of citrate and polyamines, while the choline level is elevated relative to the creatine level, thus resulting in significant changes in the choline-plus-creatine-to-citrate ratio in regions of cancer (grade IV, above 0.61 and grade V, above 0.86). We performed MR imaging and MR spectroscopic imaging in 42 men with negative findings at 2 or more prostatic biopsies and at digital rectal examination. The authors developed a method of overlaying the abnormal voxels (grade IV and V), detected on MR spectroscopic imaging, on the corresponding transverse transrectal US images and used to perform voxel-guided biopsy of the prostate. In this method, internal and external anatomic landmarks were used. All patients subsequently received an extended-pattern biopsy scheme. Cancer was detected in 17 (55%) of 31 men with positive MR spectroscopic imaging findings. Combination of the extended-pattern biopsy and MR spectroscopic imaging-guided biopsy results yielded a sensitivity of 85%, specificity of 89%, positive predictive value of 58%, negative predictive value of 97%, and accuracy of 89% ($p < 0.5$). These initial results show that radiologists who perform MR imaging, MR spectroscopic imaging examinations, and transrectal US-guided biopsy can transfer metabolic data from MR spectroscopic imaging to transrectal US images and effective use this data to sample regions suspicious of cancer in men with rising PSA levels and prior negative findings at biopsy. The authors found several important additional findings in this study: a) the average prostate volume in patients with cancer was higher than that in patients without cancer (87g vs. 58g, respectively). Five of 13 patients with positive biopsy findings had very large prostates (> 75g); b) in the 17 patients in whom cancer was detected with MR spectroscopic imaging and confirmed at biopsy, 10 (59%) had at least one site of cancer located toward the midline of the peripheral zone (area usually not sampled in most transrectal ultrasound biopsy scheme). This study has however several limitations. First, the accuracy with MR spectroscopic imaging reflects only a prediction of biopsy results, second, the authors did not evaluate the transition zone and third the transfer of spectral abnormalities onto the transrectal US images used for prostate biopsies is currently a manual process that is susceptible to localization errors. We think that MR spectroscopic imaging of the prostate is useful in patients with elevated PSA and with 2 sets of negative biopsies (one of which include the transition zone). To validate this hypothesis, however, a larger number of patients must be studied with standardized MR spectroscopic techniques.

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Comparison of CT findings in symptomatic and incidentally discovered pheochromocytomas

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Objective: The objective of our study was to determine the prevalence of incidental pheochromocytomas, whether their imaging characteristics differ from those of pheochromocytomas in symptomatic patients, and whether they differ from adenomas using CT densitometry.

Materials and Methods: The records from 335 adrenalectomies performed at our institution from 1995 to 2002 were reviewed, and 71 pheochromocytomas were identified. Thirty-three patients had CT examinations performed at our institution that were available for retrospective review. From electronic and hard-copy medical records, patient age and sex, the indications for imaging, and biochemistry activity were recorded. Pheochromocytomas were classified as symptomatic or incidental on the basis of clinical presentation. These groups were compared for differences in patient age, adrenal mass volume and maximal diameter based on CT dimensions, attenuation on unenhanced CT, attenuation on enhanced CT during the portal phase, the presence of calcifications, low attenuation or cystic changes, biochemical activity, and hypertension. Statistical significance was assessed with the Student's t test or chi-square test, as appropriate.

Results: Nineteen incidental (57.6%) and 14 symptomatic (42.4%) adrenal pheochromocytomas were in the study. There was a significant difference between the two groups as to whether hypertension was present (incidental, 10/19 [52.6%]; symptomatic, 14/14 [100%]; p = 0.0025). We found a trend toward calcification present in more symptomatic patients (incidental, 0/19 [0%]; symptomatic, 4/14 [28.6%]; p = 0.0670). No statistically significant difference was noted in the mean patient age (incidental, 51.7 years; symptomatic, 45.9 years), mean volume of the mass (incidental, 74.0 cm(3); symptomatic, 78.2 cm(3)), mean maximal diameter of the mass (incidental, 5.26 cm; symptomatic, 5.33 cm), mean attenuation on unenhanced CT (incidental, 36.6 H; symptomatic, 34.2 H), mean attenuation on enhanced CT (incidental, 93.7 H; symptomatic, 104.3 H), necrosis score or biochemical activity (incidental, 17/18 [94.4%]; symptomatic, 12/14 [85.7%]). No attenuation value of any pheochromocytoma was less than 10 H on unenhanced CT (median, 35 H; range, 17-59 H).

Conclusion: In our study population, 57.6% of the pheochromocytomas were incidental, more than in most reported series. A history of hypertension was more frequent in the symptomatic group (p = 0.0025), but no radiologic parameters that allow differentiation of incidental and symptomatic pheochromocytomas were found. None of the pheochromocytomas had attenuation values of less than 10 H on unenhanced CT scans.

Editorial Comment

The authors present a retrospective review of the clinical and unenhanced CT densities of 33 pathologically proven adrenal pheochromocytoma. It was radiologically impossible to differentiate incidental and symptomatic incidental pheochromocytomas. Although small series with high incidence of incidentally discovered pheochromocytoma has been described, the authors report a large series with a very high incidence of this lesion (57.6%). The reported frequency of incidental pheocromocytomas is 1.5 - 23 (1). As we know pheochromocytomas appears usually as a large (> 3 cm in diameter), well-defined mass and with a density near that of muscle on unenhanced CT scans. Small lesions however can be homogeneous. On post contrast scans larger lesions often shows marked and heterogeneous enhancement due to its vascularity and presence of tissue necrosis or internal hemorrhage. In this study the median size of pheochromocytomas was 4.25 cm (ranging from 2.6 to 11.2 cm). The authors pointed out that based on size alone a pheochromocytoma could be mistaken for an adenoma by the radiologist. It is not recommended however to use the size as the only criterion to determine if an adrenal incidentaloma is an adenoma or not. Radiologist should also be aware that all adrenal incidentalomas requires further biochemical investigation to determine if the mass (even with radiologic features of an adenoma), is hormonally active or not. An interesting finding of this report is that no attenuation value of any pheochromocytoma in this series was less than 10 H on unenhanced CT scans (median, 35 H; range, 17-59 H). This information is similar to our experience. In a recent revision of the imaging findings of 8 incidental pheocromocytomas of our series, all lesions presented with a density higher than 27 H on unenhanced CT scans. This finding would make almost impossible an incidental pheocromocytomas to be considered as a lipid-rich adenoma (the majority of lipid-rich adrenal adenomas measures equal to or less than 10 H). We should also remember that sporadic cases of adrenal pheocromocytomas containing sufficient intracellular fat to display CT densities similar to lipid–rich adenoma has been described (2). The authors considered that one of the limitation of this study was the lack of the washout studies. Regarding the washout profiles adrenal pheocromocytomas may display a variable washout pattern; similar to metastases in some cases and similar to adenomas in others. We feel however that this technique has some limitations for the evaluation of adrenal pheocromocytomas, particularly the larger ones. Since determination of washout curves requires that at least two thirds of the mass present homogeneous attenuation and these lesions frequently shows areas of necrosis or hemorrhage, an accurate quantification of washout curve would be more difficult to obtain. A prospective study of a larger number of cases would be interesting.

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UROGENITAL TRAUMA

Erectile dysfunction after a long-distance cycling event: associations with bicycle characteristics

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