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UROLOGICAL SURVEY

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STONE DISEASE

Minimally invasive percutaneous ablation of parapelvic renal cysts and caliceal diverticula using bipolar energy

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Background and Purpose: The use of bipolar electrocautery has proven advantages over monopolar energy during transurethral surgery by limiting hyponatremia and its clinical sequelae. Percutaneous ablation of caliceal diverticula and parapelvic renal cysts has been shown to be an effective surgical approach for the management of these conditions when clinically indicated. We present single center results of percutaneous ablation of renal cysts and caliceal diverticula using a bipolar energy technique and compare the results with a cohort of patients undergoing the procedure using monopolar energy.

Patients and Methods: Between July 2006 and June 2010, 30 patients with caliceal diverticula and renal cysts underwent percutaneous ablation using the bipolar resection system with saline irrigation (group 1). This group was compared with a cohort of 19 patients who underwent traditional ablation using a standard resectoscope, monopolar energy, and glycine irrigation (group 2). We evaluated operative times, change in hematocrit and serum sodium levels from preoperative levels, complication rates, as well as symptomatic and radiographic success rates.

Results: The mean operative times were 87 minutes and 63 minutes for groups 1 and 2, respectively ($P = 0.07$). The mean percent decrease in hematocrit was 3.27 ± 1.93 in group 1 and 3.82 ± 2.09 in group 2 ($P = 0.16$), and the mean decrease in serum sodium level was -0.21 ± 2.24 mEq/L in group 1 and 3.78 ± 2.18 mEq/L in group 2 ($P < 0.001$). There were no intraoperative complications. One patient needed ureteral stent placement for persistent urine leak. All patients with symptomatic renal cysts reported resolution of their discomfort, with radiographic success confirmed in 89% in group 1 and 79% in group 2 ($P = 0.41$).

Conclusions: Percutaneous ablation of caliceal diverticula and renal cysts using a bipolar resection system is feasible and appears to have efficacy similar to that of the monopolar system. In addition, use of isotonic saline as the irrigation medium appears to reduce the risk of postoperative hyponatremia.

Editorial Comment

The authors clearly demonstrate that the use of bipolar electrocautery and saline irrigation affords a greater margin of safety with regards to hyponatremia. Though the authors report the mean change in serum sodium, they do not report whether any patients in the monopolar arm experienced hyponatremia that required treatment or was symptomatic. The true clinical impact of bipolar electrocautery (and cost justification) would depend on the rate of symptomatic hyponatremia.

The authors do not report the size of the diverticulae and cysts treated percutaneously. One would anticipate that operative time and risk of fluid absorption would correlate with the surface area of the cyst / diverticular cavity; this may have been an important variable to control for.

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Tracking intraoperative fluoroscopy utilization reduces radiation exposure during ureteroscopy

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Purpose: Recent studies have demonstrated deleterious effects of ionizing radiation from diagnostic and therapeutic imaging procedures. One of the barriers to minimizing patient exposure is physician awareness. We prospectively studied whether providing surgeons with feedback on their fluoroscopy utilization would affect intraoperative fluoroscopy times.
Materials and Methods: In 2007, we prospectively began to track fluoroscopy usage for all urology cases. Nine months later, surgeons started to receive periodic reports with their mean fluoroscopy time compared with their peers. We reviewed all ureteroscopic cases for nephrolithiasis from the date tracking began (2006-2010, n = 311). Using the initial 9-month period as a control, we studied the effect of providing feedback on mean fluoroscopy times in subsequent periods and analyzed patient factors that may affect radiation exposure.
Results: Mean fluoroscopy times for unilateral ureteroscopy decreased by 24% after surgeons received feedback (2.74-2.08 minutes, p = 0.002). On multivariate analysis, factors that independently predicted decreased fluoroscopy times included female sex (p = 0.02), stones in the distal ureter (p = 0.04), and if the surgeon had received feedback (p = 0.0004). Factors that increased fluoroscopy times included the presence of hydronephrosis (p = 0.001), use of a ureteral access sheath (p = 0.04), ureteral balloon dilation (p = 0.0001), and placement of a postoperative stent (p = 0.002).
Conclusions: Providing surgeons with feedback on their fluoroscopy usage reduces patient and surgeon radiation exposure. Implementing such a tracking system requires minimal changes to existing operating room staff workflow. Further study is warranted to study the impact of this program on other procedures that utilize fluoroscopy in urology and other specialties.

Editorial Comment

This is an important study that could have major impact on radiation exposure - it is a worthy initiative that should be extended to shockwave lithotripsy, percutaneous nephrolithotomy, videourodynamics and beyond urology. It is important to note that fluoroscopy on-time is not the sole variable that the urologist can control to minimize radiation exposure. It would be useful to provide a more comprehensive educational tool, that included the appropriate positioning of the c-arm and image intensifier (distance from the patient skin, under-table configuration, avoiding angled trajectories), the appropriate use of last image hold and collimation, and other radiation-mitigating variables that can make the OR a safer place for patient and physician.

The inclusion of patients treated with an occlusion device in the second arm of the study is an important confounder to the study. It is feasible that an occlusion device could decrease operative time and fluoroscopy time if it prevented stone migration and the need for adjunctive flexible ureteroscopy. It may have been worthwhile to exclude these patients, and evaluate two cohorts treated with or without an occlusion device in the second phase of the study to evaluate the impact of the device.

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ENDOUROLOGY & LAPAROSCOPY

Renal function outcomes after laparoscopic renal cryoablation

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Abstract Background and Purpose: Laparoscopic cryoablation (LCA) has emerged as an alternative to conventional surgery for the management of a T(1) renal mass; however, only few data are available on its functional outcomes. We assessed renal function changes after LCA in patients with normal renal function (NRF) and preexisting chronic renal insufficiency (CRI).
Patients and Methods: Data of consecutive patients who were undergoing LCA between 2000 and 2008 at Duke University Medical Center were analyzed. Renal function parameters were obtained preoperatively, at discharge, and at 6, 12, and 24 months postoperatively. Serum creatinine (sCr) levels and estimated glomerular filtration rates (eGFR) were compared over a 2-year follow-up.
Results: Of 67 patients, 22 (33%) had CRI at baseline. These patients were older, had larger tumors (2.5 vs 2.0 cm, P = 0.039), and a higher incidence of multiple lesions (22.7% vs 4.4%, P=0.034). Compared with baseline, sCr was significantly increased and eGFR declined at discharge, 6, 12, and 24 months in both NRF and CRI groups. Median sCr increase was 0.1 mg/mL, eGFR declined by 4.2 mg/mL/1.73 m(2) in the CRI cohort and up to 8.8 mg/mL/1.73m(2) in NRF patients (all $P < 0.05$) during the follow-up. Compared with baseline, however, no significant changes were noted in the distribution of CRI categories at any time (all $P > 0.05$). Conclusions: A minimal decline in renal function can be appreciated in patients undergoing LCA at midterm follow-up. This decline is no higher in CRI than in NRF patients. LCA offers excellent renal function outcomes at 2 years follow-up. Specifically, in patients with CRI, LCA offers excellent preservation of renal function.

Editorial Comment

The authors investigated an important question regarding new technological aspects of nephron-sparing surgery for small renal masses. The investigators assessed renal function changes after Laparoscopic cryoablation (LCA) in patients with normal renal function (NRF) and preexisting chronic renal insufficiency (CRI). From a total of 67 patients, 22 (33%) had CRI at baseline.

The study indicates a statistically significant decline in renal function after LCA in both NRF and CRI patients. This is in contrast with the data seen in CRI patients on the other. In the present study, renal function decline was more pronounced among patients with normal renal function preoperatively despite the latter group having smaller tumors and lower incidence of multifocal disease. Interestingly, the data may suggest that while renal function stabilized in CRI patients after LCA, a continuous decline may be observed in the NRF group over a 2-year follow-up period. This may be because of a more attentive dietary regimen and behavioral measures to preserve renal function undertaken by patients with preexisting CRI compared with their “healthy” counterparts. Despite the evident decline in renal function parameters, its clinical significance is questionable, because no marked changes in the distribution of CKD categories were noted at any time point compared with baseline, and only two patients (both from the NRF group) were reclassified two CKD categories higher compared with baseline. LCA represents an efficient alternative to minimize renal function deterioration in patients with small renal tumors and preexisting renal insufficiency.

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Positive surgical margins after robotic assisted radical prostatectomy: a multi-institutional study

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Purpose: Positive surgical margins are an independent predictive factor for biochemical recurrence after radical prostatectomy. We analyzed the incidence of and associative factors for positive surgical margins in a multi-institutional series of 8,418 robotic assisted radical prostatectomies.
Materials and Methods: We analyzed the records of 8,418 patients who underwent robotic assisted radical prostatectomy at 7 institutions. Of the patients 323 had missing data on margin status. Positive surgical margins were categorized into 4 groups, including apex, bladder neck, posterolateral and multifocal. The records of 6,169 patients were available for multivariate analysis. The variables entered into the logistic regression models were age, body mass index, preoperative prostate specific antigen, biopsy Gleason score, prostate weight and pathological stage. A second model was built to identify predictive factors for positive surgical margins in the subset of patients with organ confined disease (pT2).
Results: The overall positive surgical margin rate was 15.7% (1,272 of 8,095 patients). The positive surgical margin rate for pT2 and pT3 disease was 9.45% and 37.2%, respectively. On multivariate analysis pathological stage (pT2 vs pT3 OR 4.588, $p < 0.001$) and preoperative prostate specific antigen (4 or less vs greater than 10 ng/mL OR 2.918, $p < 0.001$) were the most important independent predictive factors for positive surgical margins after robotic assisted radical prostatectomy. Increasing prostate weight was associated with a lower risk of positive surgical margins after robotic assisted radical prostatectomy (OR 0.984, $p < 0.001$) and a higher body mass index was associated with a higher risk of positive surgical margins (OR 1.032, $p < 0.001$). For organ confined disease preoperative prostate specific antigen was the most important factor that independently correlated with positive surgical margins (4 or less vs greater than 10 ng/mL OR 3.8, $p < 0.001$).
Conclusions: The prostatic apex followed by a posterolateral site was the most common location of positive surgical margins after robotic assisted radical prostatectomy. Factors that correlated with cancer aggressiveness, such as pathological stage and preoperative prostate specific antigen, were the most important factors independently associated with an increased risk of positive surgical margins after robotic assisted radical prostatectomy.

Editorial Comment

Despite advances in technology and surgical techniques the promise of a complete negative surgical margin for radical prostatectomy seems to be a Chimera. Recent reports demonstrate stable results for positive surgical margins in large series of radical prostatectomies but it seems always intimately related to surgeons experience and performance rather than the surgical technique utilized. Patel and colleagues should be commended for their effort of demonstrating a multi-institutional study which the common factor is the use of robotic technology to perform radical prostatectomies for prostate cancer. The PSMs are comparable to open series and conclusions about the superiority of the robotic technology were not noted in the conclusion by the authors. On multivariate analysis pathological stage and preoperative prostate specific antigen (4 or less vs greater than 10 ng/mL OR 2.918, $p < 0.001$) were the most important independent predictive factors for positive surgical margins after robotic assisted radical prostatectomy. Curiously, heavier prostates were associated with a lower risk of positive surgical margins after robotic assisted radical prostatectomy and a higher body mass index was associated with a higher risk of positive surgical margins. For organ confined disease preoperative prostate specific antigen was the most important factor that independently correlated with positive surgical margins.

Studies have demonstrated that even after approximately 3 decades of research trying to achieve the perfect radical prostatectomy seems to be a daunting task due to lack of complete understanding of the surgical landmarks and the suboptimal imaging and diagnostic tests to pre-operatively evaluate the true localization of the cancer in the prostate.

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IMAGING

Incidence of Nephrogenic Systemic Fibrosis after Adoption of Restrictive Gadolinium-based Contrast Agent Guidelines

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Radiology. 2011; 260: 105-11

Purpose: To retrospectively determine the incidence of nephrogenic systemic fibrosis (NSF) in a large academic medical center after the adoption of restrictive gadolinium-based contrast agent (GBCA) administration guidelines.

Materials and Methods: For this retrospective HIPAA-compliant study, institutional review board approval was obtained and the requirement for informed consent was waived. Restrictive GBCA guidelines were adopted in May 2007. The guidelines (a) require a recent serum creatinine level measurement in any patient who is aged 60 years or older and/or at risk for renal disease, (b) limit the maximal weight-based GBCA dose administered to any patient with an estimated glomerular filtration rate (eGFR) lower than 60 mL/min/m(2)

to 20 mL, and (c) prohibit the administration of any GBCA in patients who have an eGFR lower than 30 mL/min/m(2) and/or are undergoing chronic dialysis treatment (except in emergency situations). The electronic medical records were searched for all contrast material-enhanced magnetic resonance (MR) imaging examinations performed during the post-guidelines adoption period between January 2008 and March 2010 and the pre-guidelines adoption and transitional period between January 2002 and December 2007. Separate pathology records were searched for biopsy-confirmed cases of NSF during the same study periods. The incidences of NSF during the pre-guidelines adoption and transitional period and post-guidelines adoption period were compared by using the paired Z test.
Results: A total of 52 954 contrast-enhanced MR examinations were performed during the post-guidelines adoption period. Of these 52 954 examinations, 46 464 (88%) were performed in adult patients with an eGFR of 60 mL/min/m(2) or higher or presumed normal renal function and 6454 (12%) were performed in patients with an eGFR of 30-59 mL/min/m(2). Thirty-six patients with an eGFR lower than 30 mL/min/m(2) underwent contrast-enhanced MR imaging for emergent indications. Review of the pathology records for January 2008 to September 2010 revealed no new cases of NSF resulting from GBCA exposure.
Conclusion: After restrictive guidelines regarding GBCA administration were instituted, no new cases of NSF were identified among 52 954 contrast-enhanced MR examinations, including those performed in patients with an eGFR lower than 60 mL/min/m(2).

Editorial Comment

More than 300 cases of nephrogenic systemic fibrosis (NSF) have been described since 2000. This important complication occurred in patients with severe chronic renal insufficiency or acute renal failure or in patients undergoing dialysis, usually within weeks to months after receiving intravenous injection of a high dose of gadolineum based contrast agent. Besides impaired renal function other important risk factors for developing NSF are pro-inflammatory conditions, failure to perform dialysis promptly after gadolineum injection, use of nonionic linear contrast agents and hyperphosphatemia (1).

The authors demonstrates that in their institution, strict obedience to a well designed restrictive guidelines, allowed the elimination of cases of NSF in a large number of patients (nearly 53.000). Similar guidelines to this study are used nowadays in several centers worldwide explaining the massive reduction in the number of patients with this complication in the last two years. As pointed out by the authors, cooperation between radiologist and referral physician is essential in order to accomplish optimized use of gadolineum-based contrast agents whenever its use is mandatory.

Another important aspect that favorably contributed to the reduction of number of patients with NSF was the development and progressively improvement of magnetic resonance techniques that allow vascular imaging without the use of intravenous injection of contrast material.

Reference

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Hematuria Evaluation With MDCT Urography: Is a Contrast-Enhanced Phase Needed When Calculi Are Detected in the Unenhanced Phase?

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Objective: The purpose of this study was to assess the added utility of the contrast-enhanced phase of MDCT urography (MDCTU) when urinary tract calculi are detected in the preliminary unenhanced phase.
Materials and Methods: A computer search of CT reports with the term "hematuria" yielded the records of 1209 patients who had undergone MDCTU. The reports of 286 MDCTU examinations in which urinary tract calculi were detected were identified, and two blinded abdominal radiologists reviewed the images to find a second source of hematuria. The unenhanced images were reviewed first, and the findings were compared with those on the subsequent contrast-enhanced images. The aggregate findings of the 286 examinations in which calculi were present were compared with those of the 923 examinations in which calculi were absent. The follow-up diagnosis was based on histopathologic findings, findings at urologic procedures, or the imaging diagnosis.
Results: In 119 of the 1209 patients (10%), 127 lesions other than urinary tract calculi were identified as possible sources of hematuria. Eighty-two lesions were diagnosed in 77 patients (6%) at follow-up evaluation. A second source of hematuria was found in 19 of the 286 examinations (7%) with calculi compared with 58 of the 923 examinations (6%) without calculi ($p = 0.828$), and contrast was needed to make a specific diagnosis in 16 of the 19 examinations (84%).
Conclusion: When urinary tract calculi are identified at MDCTU, the rate of detection of other potential causes of hematuria is not different from that in MDCTU examinations without calculi. The contrast-enhanced portion of the MDCTU examination is needed even if calculi are seen because important pathologic changes are diagnosed only after the contrast-enhanced phase.

Editorial Comment

Multi-detector computed tomography (MDCT) urography has become the "gold standard" imaging technique for the investigation of patients with hematuria. MDCT urography protocol should be designed to optimize visualization of urolithiasis, the renal parenchyma and the urothelium. Although there is no consensus how to do it, most of the time, patients are imaged with the three-phase protocol: nonenhanced acquisition through the abdomen and pelvis (for detecting urolithiasis), nephrographic phase (through the abdomen) and delayed excretory phase (through the abdomen and pelvis). Using this protocol in our institution the patient effective radiation dose varies from 20-22 mSv (almost the double of the effective dose from an excretory urography, 10-12 mSv).

As pointed out by the authors, the American Urologic Association states that in patients with microscopic hematuria and at low risk of malignancy, no further imaging is needed if unenhanced phase of CT examination reveals urolithiasis. Since in the authors´ experience, second source of hematuria had practically the same frequency in the group of patients with calculi (7%) to those without calculi (6%), they concluded that complete MDCT urography protocol should be performed even in these patients at low risk of malig-

nancy. These conclusions however deserve some considerations. For example, if we assume that cystoscopy is still the reference standard for bladder cancer detection, MDCT urography would have been essential for the detection only upper tract neoplasm observed in 2% of examinations (six out 289). It is clear that this paper brought a very important contribution to the difficult task of balancing risk and benefits when performing MDCT-urography for hematuria. In our institution, for example, post-contrast phases are not obtained only in patients in who unenhanced scans reveals stone in the ureter or in the bladder. These patients and their referral physicians are instructed about the necessity of complimentary post-contrast phases only when hematuria persists after treatment or elimination of the stone.

There is no doubt that this subject is debatable and studies including patients with other risk factors are needed. Meanwhile radiologist should make efforts to reduce the radiation dose from MDCT-urography without impairing its diagnostic accuracy.

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PATHOLOGY

Significance of Prostate Adenocarcinoma Perineural Invasion on Biopsy in Patients Who are Otherwise Candidates for Active Surveillance

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Purpose: Perineural invasion on biopsy is associated with extraprostatic extension at radical prostatectomy. To our knowledge the significance of perineural invasion on biopsy in patients who otherwise meet the criteria for active surveillance has not been studied.
Materials and Methods: The biopsy criteria for active surveillance were Gleason score 6 or less, 2 or fewer positive cores and 50% or less involvement any positive core. All cases had at least 12 biopsy cores. A total of 313 cases met the biopsy criteria for active surveillance, and elected to undergo immediate radical prostatectomy at our institution between 1992 and 2008. These cases included 51 with perineural invasion and 262 without perineural invasion.
Results: There was no significant difference in patient age and mean serum prostate specific antigen at diagnosis in cases with and those without perineural invasion. Cases with perineural invasion on biopsy had a higher maximum percentage of cancer on biopsy (18.6%) vs those without perineural invasion (15.0%, $p = 0.02$). Cases with perineural invasion also had slightly more with 2 positive cores compared to cases without perineural invasion (56.9% and 39.7%, respectively, $p = 0.02$). Despite a greater extent of cancer on biopsy, cases with and those without perineural invasion on biopsy showed no significant difference in surgical margin involvement (6% vs 7.3%, respectively) or organ confined disease (84.3% vs 91.6%, respectively).
Conclusions: Cases that meet biopsy criteria for active surveillance yet have perineural invasion showed no significant difference from those without perineural invasion in terms of adverse findings at radical

prostatectomy. Patients with perineural invasion who meet criteria for active surveillance should not be excluded from this treatment option.

Editorial Comment

Perineural invasion (PNI) on needle prostatic biopsies as a marker of extraprostatic extension has been controversial. In almost all studies perineural invasion has been related to extraprostatic extension in univariate analysis but in only a few studies in multivariate analysis. The practical importance relates to the decision of whether to sacrifice part or all of the neurovascular bundle on the side of the biopsy with PNI in planning nerve-sparing radical prostatectomy. The study from Johns Hopkins has shown that cases that meet biopsy criteria for active surveillance yet have perineural invasion showed no significant difference from those without perineural invasion in terms of adverse findings at radical prostatectomy. Patients with perineural invasion who meet criteria for active surveillance should not be excluded from this treatment option. Cases with biopsy criteria for active surveillance are considered insignificant having Gleason score 6 or less, 2 or fewer positive cores and 50% or less involvement in any positive core.

The findings are very similar to a study from my Institution published in Int Braz J Urol (1). We found that tumor extent on needle biopsies influences the predictive value of PNI for pathologic stage > pT2 (pT3a and/or pT3b) on radical prostatectomies. In patients with more extensive tumors on needle biopsy, PNI predicted pathologic stage > pT2 on radical prostatectomy on univariate analysis but on multivariate analysis did not show independent predictive value. This finding is in accordance to most of the studies in the literature. In patients with less extensive tumors on biopsy (< 13.6% of tissue in mm containing carcinoma) and PNI, there was no association to any one clinical or pathological variables studied; no difference in the time to biochemical (PSA) progression-free outcome comparing to patients without PNI; and, no predictive value for pathological stage > pT2 on both univariate and multivariate analysis. With a higher number of small tumors currently detected, our results favor that PNI on needle biopsy should not be considered in the decision to sacrifice or not the neurovascular bundle in planning nerve-sparing radical prostatectomy.

Reference

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Handling and reporting of transurethral resection specimens of the bladder in Europe: a web-based survey by the European Network of Uropathology (ENUP)

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Aims: To collect of information about European practices on handling and reporting of transurethral resection specimens of the bladder.
Methods and Results: The European Network of Uropathology is a communication network that includes 335 pathology laboratories in 15 western European countries. A web-based questionnaire was answered by 52.2% of members. Some routines were adopted by a majority: formalin fixation (92.5%), separate containers for tumors and resection base (72%) and embedding of the entire specimen (60%). Cancer along/in adipose tissue would be reported as pT3a by 19.5% and non-invasive urothelial carcinoma in prostatic ducts/glands as pT4a by 16.1%. Papillary urothelial neoplasia of low malignant potential is recognized by 72.6% but rarely reported. Immunohistochemistry is rarely or sometimes used for diagnosing bladder cancer by 91.7%, and the most frequently used markers are CK20 (76.9%), CK7 (66.7%) and Ki67 (38.8%). Only 24.8% report prognostic markers, with Ki67 (84.4%) and p53 (64.4%) being most common. Only 50.9% use the International Society of Urological Pathology 1998/World Health Organization (WHO) 2004 grading system, followed by WHO 1973 (43.4%) and WHO 1999 (31.4%).
Conclusions: There is still variability in routine practice and a need for standardization of methodologies. These results may be helpful when judging what recommendations are reasonable to issue.

Editorial Comment

Surveys on handling and reporting of surgical specimens are very important tools for consensus conferences among pathologists. Due to the high frequency of transurethral resection specimens of the bladder, standardization of methodologies are of utmost importance.

In TUR resections of malignant neoplasias, the pathology report should inform:

1. The histologic diagnosis. Most of the tumors are urothelial carcinomas. Sarcomas are very rare. There are several histologic variants of urothelial carcinomas.
2. Configuration. Papillary, non papillary, inverted growth.
3. Differentiation. Squamous differentiation is more frequent than glandular differentiation. There are other rare types of differentiation. Tumors with differentiation, in general, show a higher stage at diagnosis.
4. Grading. Several systems may be used: grades 1, 2, and 3 (WHO); low-grade (corresponding to grade 1) and high-grade (corresponding to grades 2 and 3) (WHO/International Society of Urological Pathology); and combined numbers, e.g. 1+2 (low-grade in most areas + high-grade as a secondary grade, 1+1 (low-grade in all areas examined), etc.
5. Staging. According to the TNM: Tis (flat carcinoma in situ), Ta (papillary non invasive or papillary in situ), T1 (subepithelial connective tissue invasion), T2 (muscularis propria invasion). An important distinction for the pathologist is muscularis propria vs. muscularis mucosae. Invasion of the latter is still T1.
6. A very important information that should be included in the report is presence or not of sections of muscularis propria in the TUR. In cases of T1 without sections of muscularis propria, stage T2 cannot be excluded. A new TUR should be performed for an adequate staging.

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RECONSTRUCTIVE UROLOGY

Long-term results of permanent urethral stent Memotherm implantation in the management of recurrent bulbar urethral stenosis

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Study Type - Therapy (case series) Level of Evidence 4 What's known on the subject? and What does the study add? Milroy reported 84% success at a mean of 4.5 years follow-up by usage of a permanently implantable "urolume" spent in 1993. Memotherm was developed later, especially for urologic use. Our study is one of the largest in this urea, with a high number of patients and a long follow-up period.
Objective: To evaluate the effectiveness and long-term results of permanent urethral stent (Memotherm) implantation in the treatment of recurrent bulbar urethral stricture.
Patients and Methods: In all, 47 patients with a history of previous unsuccessful treatment for bulbar urethral stricture were treated using Memotherm bulbar urethral stents between 1998 and 2002. Long-term follow-up data was analysed and discussed.
Results: At the end of the 7-year period 37 of 47 patients (78.7%) had been treated successfully. Post-micturition dribbling incontinence lasting up to 3 months after stent placement occurred in 32 (68.1%) patients, but this was reduced to only seven patients (14.9%) by the 7-year follow-up. There was stress incontinence of various severities in nine (19.2%) patients at the 1-year follow-up. These patients were those who had stenosed urethral segments adjacent to the external sphincter. At the long-term follow-up < 10% of the patients had stress incontinence complaints.
Conclusion: Memotherm is a good treatment option in patients with recurrent bulbar urethral stricture of any cause.

Editorial Comment

Currently, the management of bulbar urethral strictures is limited to dilation, urethrotomy and urethroplasty. An attractive compromise between the invasiveness of these options would be a permanently implanted urethral stent. Stents also promise the hope of drug-eluting versions which might help prevent stricture recurrence. Indeed, the Memotherm urethral stent is an attractive candidate for this role and has two distinct theoretical advantages over the older Urolume stent. First, the Memotherm expands at body temperature and contracts at colder temperatures, making it easier to remove. Second, it is a wall stent rather than a mesh stent like the Urolume which might limit the hyperplastic reaction. The current investigation is a retrospective study which reports outcomes at 7 years. However, nearly 50% needed a second procedure within that time frame and hyperplastic reaction was not uncommon. The authors posit that urethral stent placement should be the treatment of choice for urethrotomy failure as urethroplasty can always be performed later with good results. However, urethroplasty after Urolume stent removal frequently requires a 2-stage procedure (1). We look forward to prospective randomized trials of urethral stents.

Reference

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Direct Vision Balloon Dilation for the Management of Urethral Strictures

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Abstract Urethral strictures are often initially managed with dilation using sequential metal sounds or filiform and follower dilators. While these techniques often successfully achieve at least a temporary increase to the caliber of the area of stricture, they are performed without visual guidance, and complications can include false passage and urethral perforation. We describe the first use of balloon dilator that allows the safe, controlled, and gentle and dilation of urethral strictures under direct vision.

Editorial Comment

Balloon dilation of strictures may be preferable to dilation with sounds or filiforms and followers in those balloons allow radial dilation which avoids the shearing force of passing successively larger dilators. The authors describe the technique and equipment they have developed that allows for direct vision balloon dilation of urethral strictures. A 30F balloon dilator was developed that fits through a 21F rigid cystoscope. Other 30F balloons such as those used for renal tract dilation do not fit through a cystoscope; however, these older models can still be inflated under direct vision with the following technique. One first places the balloon catheter over a wire then passes a flexible cystoscope alongside the balloon catheter up to the balloon in order to directly observe the dilation.

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UROLOGICAL ONCOLOGY

The prognostic significance of capsular incision into tumor during radical prostatectomy

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Eur Urol. 2011; 59: 613-8

Background: The prognostic significance of capsular incision (CapI) into tumor during radical prostatectomy (RP) with otherwise organ-confined disease remains uncertain.
Objective: To evaluate the impact of CapI into tumor on oncologic outcome.
Design, Setting, and Participants: A retrospective review of 8110 consecutive patients with prostate cancer treated at Ottawa Hospital and at Memorial Sloan-Kettering Cancer Center, both tertiary academic centers, between 1985 and 2008.
Intervention: All patients underwent an open, laparoscopic or robotic RP.
Measurements: Patients were divided into four pathologic categories: group 1 (CapI group), positive surgical margins (PSMs) without extraprostatic extension (EPE); group 2, negative surgical margins (NSMs) without EPE; group 3, NSM with EPE; group 4, PSMs with EPE. Estimates of recurrence-free survival were generated with the Kaplan-Meier method. Recurrence was defined as a prostate-specific antigen (PSA) > 0.2 ng/mL and rising. Cox proportional hazards regression was used to estimate the hazard ratio (HR) for recurrence controlling for pretreatment PSA, RP date, RP Gleason sum, seminal vesicle invasion, and lymph node involvement. Pathologic categories were defined in the model by including the variables EPE and surgical margins (SMs) as well as their interaction.
Results and Limitations: Median follow-up was 37.3 mo. The 5-yr recurrence-free probability after RP for the CapI group was 77% (95% confidence interval [CI], 72-83). This was not only inferior to patients with NSMs and no EPE (log rank $p < 0.0001$) but also to those with NSMs and EPE (log rank $p = 0.0002$). In multivariate analysis the interaction between EPE and SM was not significant ($p = 0.26$). In the adjusted model excluding the interaction term, patients with EPE had an increased risk for recurrence (HR: 1.80; 95% CI, 1.49-2.17; $p < 0.0001$) as did those with positive margins (HR: 1.81; 95% CI, 1.51-2.15; $p < 0.0001$). This was a retrospective study.
Conclusions: CapI into tumor has a significant impact on patient outcome following RP. Patients, who otherwise would have organ-confined disease, will now have a higher probability of recurrence than those with completely resected extraprostatic disease.

Editorial Comment

The authors retrospectively analyzed 8110 consecutive patients from 2 tertiary centers treated by radical prostatectomy (open, laparoscopic or robotic) for prostate cancer for the prognostic impact of capsule incision into tumor.

Finally, 6855 patients were included into the analysis of which he vast majority of 5530 patients underwent a nerve-sparing procedure.

18% of these patients had positive surgical margins without extraprostatic extension (defined as capsule incision into tumor). Capsule incision had an independent negative prognostic impact in all groups analyzed.

This information is important to all surgeons considering nerve-sparing radical prostatectomy procedures.

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Combination of adjuvant hormonal and radiation therapy significantly prolongs survival of patients with pT2-4 pN+ prostate cancer: results of a matched analysis

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Eur Urol. 2011; 59: 832-40

Background: Previous prospective randomised trials have shown a positive impact of adjuvant radiation therapy (RT) in patients with locally advanced prostate cancer. However, none of these trials included patients with lymph node invasion (LNI).
Objective: The aim of this study was to assess the impact of combination adjuvant hormonal therapy (HT) and RT on the survival of patients with prostate cancer and histologically documented lymph node metastases (pN+).
Design, Setting, and Participants: Data on 703 consecutive patients with LNI treated with radical prostatectomy, pelvic lymph node dissection, and adjuvant treatments between September 1986 and November 2002 at two large academic institutions were reviewed.
Measurements: For study purposes, patients treated with adjuvant HT plus RT and patients treated with adjuvant HT alone were matched for age at surgery, pathologic T stage and Gleason score, number of nodes removed, surgical margin status, and length of follow-up. Differences in cancer-specific survival (CSS) and overall survival (OS) were compared using the Kaplan-Meier method and life table analyses.
Results and Limitations: Following the matching process, 117 pT2-4 pN1 patients of 171 (68.4%) treated with adjuvant HT plus RT (group 1) were compared with 247 pT2-4 pN1 patients of 532 (46.4%) receiving adjuvant HT alone (group 2). After matching, the two groups of patients were comparable in terms of pre- and postoperative characteristics (all $p \geq 0.07$). Mean follow-up was 100.8 mo (median: 95.1 mo; range: 3.5-229.3 mo). Overall, prostate CSS and OS rates at 5, 8, and 10 yr were 90%, 82%, and 75%, and 85%, 70%, and 60%, respectively. Patients treated with adjuvant RT plus HT had significantly higher CSS and OS rates compared with patients treated with HT alone at 5, 8, and 10 yr after surgery (95%, 91%, and 86% vs 88%, 78%, and 70%, and 90%, 84%, and 74% vs 82%, 65%, and 55%, respectively; $p = 0.004$ and $p < 0.001$, respectively). Similarly, higher survival rates associated with the combination of HT plus RT were found when patients were stratified according to the extent of nodal invasion (namely, two or fewer vs more than two positive nodes; all $p \leq 0.006$). Lack of standardised HT and RT protocols represents the main limitations of our retrospective study.
Conclusions: Adjuvant RT plus HT significantly improved CSS and OS of pT2-4 pN1 patients, regardless of the extent of nodal invasion. These results reinforce the need for a multimodal approach in the treatment of node-positive prostate cancer.

Editorial Comment

Patients with positive lymph nodes after radical prostatectomy should receive hormonal therapy, this is common urological knowledge. Should patients with positive lymph nodes also receive adjuvant radiotherapy? This question was addressed in a large retrospective matched-pair study. 76% of N+ patients received adjuvant hormonal therapy alone and 24% received both adjuvant hormonal therapy and radiotherapy.

Interestingly, and of large clinical importance, the authors found survival advantages in favour of adjuvant radiotherapy in all subgroups analyzed. The results of this study should give cause for an appropriate prospective trial and may result in a shift of current clinical recommendations.

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NEUROLOGY & FEMALE UROLOGY

Correlations between pretransplant dialysis duration, bladder capacity, and prevalence of vesicoureteral reflux to the graft

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Transplantation. 2011; 92: 311-5

Background: Urinary bladder capacity is reduced in patients undergoing long-term dialysis, which may increase the risk of vesicoureteral reflux (VUR) to a transplanted kidney. This study investigated the correlations between dialysis duration, pretransplant and posttransplant bladder capacity, and prevalence of VUR to the graft.

Methods: Voiding cystography was performed in 101 adult renal transplant recipients without neurogenic disorders immediately before and 1 year after transplantation to evaluate bladder capacity and VUR. Nonstented extravesical antireflux ureteroneocystostomy was performed in all patients.

Results: The median dialysis duration and pretransplant bladder capacity were 32 months (range 1-426 months) and 120 mL (range 15-450 mL), and 21 patients (20.8%) underwent dialysis for more than 120 months, and 30 patients (29.7%) had a pretransplant bladder capacity of less than 80 mL. Dialysis duration was correlated with pretransplant bladder capacity ($R = 0.466$, $P < 0.001$). Bladder capacity expanded more than 6-fold from pretransplantation to posttransplantation, and all recipients had a bladder capacity greater than 150 mL at 1 year posttransplantation. Thirty patients had VUR to the graft. Dialysis duration longer than 60 months ($P = 0.021$) and pretransplant bladder capacity of less than 130 mL ($P = 0.024$) were associated with VUR. VUR was associated with lower graft function.

Conclusions: Although bladder capacity decreased because of long-term dialysis, it exceeded 150 mL at 1 year posttransplantation. A small bladder can be used in renal transplantation, but it may increase the risk of VUR.

Editorial Comment

This paper by Inoue et al. is of special interest for those who attend kidney transplant patients. It provides valuable information on the outstanding recovery capacity of defunctionalized bladders, which may have a pretransplant volume as low as < 50 mL but can potentially achieve a more than 6-fold increase at 1 year posttransplantation. All patients ended up with a > 150 mL bladder capacity following transplantation.

On the other hand, patients with low bladder capacities, notably those below 80 mL, and dyalisis lasting longer than 60 months were shown to be at higher risk of developing post operative high grade vesicoureteral reflux (VUR).

Although not a consensus in medical literature, this study showed an association of VUR and decreased renal graft function at one year follow-up.

These data should raise some important thoughts: the need to speed up renal transplantation in an effort to avoid a longer than 60 months period of dyalisis; a higher suspicion for VUR in patients who present a very low (< 80 mL) bladder capacity before transplant; and finally, we should rethink the need to routinely perform urodynamics in the preoperative planning of kidney transplant candidates, as it may provide valuable prognostic data.

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Mid-term complications after placement of the male adjustable suburethral sling: a single center experience

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Purpose: In recent years various sling systems have been proposed as a successful treatment option for male stress urinary incontinence. Reports about complication rates and failures are still scarce.
Materials and Methods: We systematically reevaluated 29 male patients who received an Argus® suburethral sling for stress urinary incontinence between October 2006 and July 2007.
Results: Overall 24 patients (83%) experienced a total of 37 complications at a median follow-up of 35 months (range 29 to 45), including 10 (35%) in acute urinary retention. The sling was removed in 10 patients (35%) due to urethral erosion (3), infection (2), system dislocation (2), urinary retention (2) and persistent pain (1). Eight men (27%) complained of significant perineal pain, necessitating continuous oral analgesics. In 1 patient ureteral reimplantation was done due to ureteral erosion from a dislocated sling. At follow-up only 5 men (17%) remained dry while 21 (72%) were dissatisfied with the clinical outcome. No available clinical variables were statistically significantly associated with any grade or high grade complications even on univariate analysis.
Conclusions: In our study cohort the Argus suburethral sling was associated with serious mechanical and infectious complications, and sparse functional results with negative impact on patient quality of life. Based on the results of this study significant changes are warranted in the sling system and in the implantation technique.

Editorial Comment

This report by Dalpiaz and cols. is strikingly important. They present a 35 month follow-up of male patients with SUI who underwent Argus sling placement. Their data point out an unacceptably high rate of complications (83%) of which more than half (58%) were grade 3 according to the Clavien system. Seventy-two percent of patients referred dissatisfaction with treatment. Only 17% remained dry, although 79% of subjects were dry when discharged home after the procedure, which shows the non sustainable efficacy of the device.

Ninety three percent of the studied population was classified as having a moderate / severe incontinence according to the number of pads used which may have influenced the low success rate. But the high complication rate obviates a need to review not only the device but the surgical technique for implantation itself.

Other reports on the Argus system are encouraged in order to corroborate these findings, but a red flag must be raised.

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GERIATRIC UROLOGY

Age-adjusted validation of the most stringent criteria for active surveillance in low-risk prostate cancer patients

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Cancer. 2011; 12. doi: 10.1002/cncr.26234. [Epub ahead of print]

Background: The authors tested the performance of the currently used clinical criteria reported in populations studied by van den Bergh et al. and Carter et al. for the selection of patients with prostate cancer (PCa) for active surveillance (AS) according to age.
Methods: Data were analyzed from 893 patients who underwent with radical prostatectomy (RP). The authors investigated the rates of unfavorable PCa at RP (extracapsular extension, seminal vesicle or lymph node invasion, or Gleason score 7-10) in patients who fulfilled AS criteria according to age tertiles (ages ≤ 63 years, 63.1 to 69 years, and > 69 years). Area under the plasma concentration time curve (AUC) analyses tested the criteria for predicting unfavorable PCa. Then, the patients were stratified according to the cutoff age of 70 years. Multivariate analyses were used to test the role of age in predicting unfavorable PCa.
Results: The rate of unfavorable PCa characteristics was between 24% and 27.8%. In the van den Bergh et al. population, after age 70 years, the rate of unfavorable PCa characteristics was 41% compared with 23.2% and 24.1% in patients in the previous age tertiles (ages ≤ 63 years and 63.1 to 69 years, respectively). In the Carter et al. population, the rate of unfavorable PCa was 41.2% compared with 17.3% and 18.6% in the previous age tertiles (ages ≤ 63 years and 63.1 to 69 years, respectively). When the 70-year age cutoff was used, unfavorable PCa was identified in 17.9% to 23.6% of patients aged < 70 years versus 4% to 41.2% of patients aged > 70 years (all P < .001). AUC analyses revealed significantly lower performance in older patients. In multivariate analyses, after adjustment for prostate-specific antigen, prostate volume, and the number of cores, age represented an independent predictor of unfavorable PCa.

Conclusions: The currently used AS criteria performed significantly better for patients aged < 70 years. The authors concluded that the current results should be taken into account when deciding whether to offer active surveillance to patients with low-risk PCa.

Editorial Comment

The major issue related to an initial surveillance policy is the possibility of losing the window of curability of the disease, and this is directly related to patients' life expectancy according to their comorbidity profile and disease natural history that are very heterogeneous and unpredictable, in part due to the misclassification of patients regarding these variables.

Previous studies suggest an association between age and prostate cancer aggressiveness, this study though retrospective and not including patients under active surveillance, highlights that older patients are affected more frequently by more aggressive disease at final pathology compared with their younger counterparts, even when they are affected by very-low-risk disease according to the criteria proposed by van den Bergh et al. and Carter et al..

In this context, mortality should be considered as the main outcome in future confirmatory studies and while older patients are typically encouraged to undergo active surveillance due to virtually shorter life expectancy, better tools predicting life expectancy and disease natural history are warranted.

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Association of Clinical Benign Prostate Hyperplasia with Prostate Cancer Incidence and Mortality Revisited: A Nationwide Cohort Study of 3 009 258 Men

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Background: Although benign prostate hyperplasia (BPH) and prostate cancer (PCa) share features such as hormone-dependent growth and response to treatment with antiandrogen therapy, BPH is generally not considered a premalignant lesion.

Objective: To determine whether clinical BPH is associated with an increased risk of PCa incidence and mortality.

Design, Setting, and Participants: Using designs with individual participant data from five national registries, we studied the entire Danish male population from 1980 through 2006, a total of 3 009 258 Danish men. We collected PCa diagnoses (n = 53 315), information on PCa mortality (n = 25 459), and ascertained clinical BPH (not histologically proven BPH) through hospitalization (n = 187 591) and/or surgery (n = 77 698) from 1980 to 2006 and the use of α-adrenergic receptor antagonists (n = 143 365) and/or the use of 5α-reductase inhibitors (5-ARIs) (n = 47 465) from 1995 to 2006.

Measurements: PCa incidence and mortality was assessed for each category of clinical BPH using Kaplan-Meier plots of cumulative incidence and Cox proportional hazard ratios (HRs) adjusted for potential confounders.
Results and Limitations: For the entire cohort studies, multivariate-adjusted HRs for PCa incidence were 2.22 (95% confidence interval, 2.13-2.31) in men hospitalized and 3.26 (3.03-3.50) in men operated on for clinical BPH versus general population controls. Corresponding HRs for PCa mortality were 2.00 (1.91-2.08) for hospitalization and 7.85 (7.40-8.32) for surgery. For age-matched cohort studies, corresponding HRs for PCa incidence were 3.04 (2.96-3.13) for hospitalization, 2.60 (2.47-2.73) for surgery, 4.49 (4.33-4.65) for α-adrenergic receptor antagonist use, and 2.54 (2.40-2.68) for 5-ARI use. Each category of clinical BPH has limitations, but limitations differ between the categories and therefore are unlikely to explain the results.
Conclusions: In Danish men followed for up to 27 yr, clinical BPH was associated with a two- to three-fold increased risk of PCa incidence and with a two- to eight-fold increased risk of PCa mortality. These data should not be used to infer causality.

Editorial Comment

This is a provocative study focusing on diagnosis and mortality, drawn from multiple nationwide registries including local causes of civil death registry and register of medicinal products statistics. All included patients have in common the final diagnosis through hospitalization and/or prescription for treatment, both utilized for registration only, all the previous heterogeneous circumstances are ignored. General population tends to be under diagnosed and under treated compared to medicated and hospitalized patients.

Selection and surveillance biases due to increased disease awareness and co-diagnosis are impossible to be excluded in this scenario of population-based study, which should not be used to infer causality as stated by authors. There are lots of similar examples of possible misinterpretations of huge collected data. The same phenomenon occurs to the risk of prostate cancer that increased markedly after the introduction of PSA testing, with a concurrent elevation in total mortality after prostate cancer diagnosis. Is PSA test related to prostate cancer incidence and mortality? Or is it related to awareness, diagnosis, and registry?

As well recognized by authors, due to the possible effect of other factors, additional studies with detailed information on PSA testing, analysis of biopsies, number of biopsies, number of visits to a urologist, number of digital rectal examinations, familial risk of prostate cancer, and staging of prostate cancer, among others are warranted and the current type of study does not allow us to use the word “risk” which should be avoided and changed by “diagnosis”, “awareness”, “report” or “registry” to prevent misinterpretations - rendering the dispassionate final title: “Association of Clinical Benign Prostate Hyperplasia with Prostate Cancer Diagnosis Report and Mortality Registry Revisited: A Nationwide Cohort Study of 3 009 258 Men”.

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PEDIATRIC UROLOGY

Assessment of lithogenic risk in children based on a morning spot urine sample

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J Urol. 2010; 184: 2103-8

Purpose: The Bonn Risk Index has been used to evaluate the risk of urinary calcium oxalate stone formation. According to the original method, risk should be determined based on 24-hour urine collection. We studied whether the Bonn Risk Index could be measured in spot urine samples and which part of the day is most suitable for this purpose.
Materials and Methods: We collected total and fractionated 24-hour urine (in a 6-hour nocturnal portion and 9 consecutive 2-hour diurnal samples) in 42 children and adolescents with calcium oxalate urolithiasis and 46 controls. Bonn Risk Index values determined from each of the urine fractions were compared to those obtained from related 24-hour urine collections.
Results: Both groups exhibited similar circadian patterns of Bonn Risk Index values. Median Bonn Risk Index for the nighttime portion of urine in the stone group was 1.4 times higher than that obtained from the total 24-hour urine. The morning hours between 08:00 and 10:00 showed the peak lithogenic risk, and this fraction had the highest sensitivity and selectivity regarding discrimination between stone formers and healthy subjects. The afternoon hours demonstrated lower and less fluctuating crystallization risk. Despite diurnal fluctuations in Bonn Risk Index, there was still a well-defined cutoff between the groups.
Conclusions: Bonn Risk Index determined from urine samples collected between 08:00 and 10:00 appears optimal in separating stone formers from healthy subjects, and appears as useful as the value determined from 24-hour urine collection. Investigation of this diurnal sample simplifies diagnosis in pediatric stone disease without loss of clinical information.

Editorial Comment

The authors sought to determine whether lithogenic risk in children could be determined from a single spot urine sample as opposed to 24-hour urine collections which can be difficult to obtain in the pediatric population. They used the Bonn Risk Index (BRI) which is an estimate of spontaneous calcium oxalate crystallization risk. They collected 24-hour urine samples from 42 calcium oxalate stone forming children on one day and on the second consecutive day they collected urine samples in 2-hour intervals throughout the day. They found circadian rhythm in the median BRI values. The authors concluded that the most critical periods of time for lithogenic risk are at night and morning hours and that spot urine samples collected after breakfast would be most useful in assessing lithogenic risk. This represents a nice screening tool to identify those patients with a higher lithogenic risk who would most benefit from a more formal metabolic evaluation.

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The predictive value of the first postnatal ultrasound in children with antenatal hydronephrosis

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Objective: To evaluate the effectiveness of the first postnatal ultrasound (US) in predicting the final postnatal diagnosis using a database of children followed prospectively for antenatal hydronephrosis, and to compare these findings with a systematic review of the literature.

Methods: The study involved 1441 children who had their radiological evaluation between 3 and 60 days of life, including an US, performed at our institution in 1998-2006. Univariate and multivariate analyses were performed. A systematic review of articles on prenatal hydronephrosis resulted in 31 studies with 2202 patients who met the inclusion criteria for analysis.

Results: 62.0% of renal units (RUs) had transient or non-obstructive hydronephrosis. Increasing degree of hydronephrosis correlated with increased risk of urological pathologies (from 29.6% RUs in the mild group to 96.3% RUs in the severe group). A systematic review of the literature indicated very poor quality data, but the findings appeared to be concordant with those from our patient population.

Conclusion: The findings from this study will help to quantify the incidence of postnatal pathology based upon the first postnatal US parameters. This information is useful for counseling and for determining which postnatal radiological tests will be necessary.

Editorial Comment

In this study the authors used a prospective database of patients with antenatal hydronephrosis presenting to their institution. They looked specifically at the first postnatal ultrasound to see if it had any predictive value in determining the diagnosis or outcome. Over an 8-year period of time they obtained data on about 2800 children. There were 1441 children who met their inclusion criteria which included a full radiologic evaluation with VCUG and MAG-3 renal scan. While they found that the majority of their patients had "physiologic hydronephrosis", there was a stronger correlation for true pathology being found in patients with higher degrees of hydronephrosis as one would expect. This is particularly true for patients with UPJ obstruction. They attempted to do a systematic review of the literature but found that there was limited data available.

While ultrasound remains a subjective imaging modality, it's important that we continue to try and tease as much information out of it as we can in order to avoid more invasive and costly imaging studies that expose infants and children to radiation. It's easy to work up the patients on the extremes: patients with mild hydronephrosis likely need no additional imaging and those with severe hydronephrosis need a VCUG and MAG-3 scan. I look forward to more studies like this that will help us all decide how to work up more of the patients who land in the middle.

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