International Braz J Urol
Official Journal of the Brazilian Society of Urology
Vol. 29 (5): 459-481, September - October, 2003

UROLOGICAL SURVEY

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EDITORIAL COMMITTEE

STONE DISEASE

Pain after percutaneous nephrolithotomy: impact of nephrostomy tube size

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J Endourol. 2003; 17: 411-4

Background and Purpose: Percutaneous nephrolithotomy (PCNL) is the procedure of choice for managing large renal calculi. Investigations have recently focused on reducing the morbidity of the procedure and improving postoperative patient comfort by using smaller endoscopic instruments. We sought to evaluate the effect of a smaller percutaneous drainage catheter on postoperative pain.

Patients and Methods: Thirty consecutive patients were randomized to receive either a 10F pigtail catheter or a 22F Councill-tip catheter for their percutaneous drainage after PCNL. The demographics were similar in the two groups, as was the rate of supracostal access (47% v 43%, respectively). Self-assessed analog pain scores were collected at 6 hours postoperatively as well as on the morning of the first and second postoperative days (POD). Total narcotic usage was tabulated using morphine equivalents. Complications, including the change from baseline hematocrit, were reviewed.

Results: There was no significant difference in the change in hematocrit (6.8 v 6.2 percentage points, respectively). Those patients with the smaller nephrostomy tube noted significantly lower pain scores at 6 hours (3.75 v 5.3; $P = 0.03$). Although the pain scores were lower on POD 1 and 2 for the 10F catheter group, the difference was not statistically different (1.9 v 2.9 and 1.25 v 1.9, respectively; both $P > 0.05$). The patients having the 10F catheter required fewer narcotics: 78 mg v 91 mg, although the difference was not statistically significant.

Conclusion: The use of a small drainage catheter after PCNL is associated with lower pain scores in the immediate postoperative period, yet no statistically significant benefit to the patient with regard to comfort is demonstrated beyond 6 hours. In addition, there is a trend toward reduced narcotic requirements. Finally, there is no apparent increase in patient morbidity from the use of the smaller nephrostomy tubes.

Editorial Comment

Despite the uniformly high stone free rates achieved with PCNL irrespective of stone burden, stone location or stone composition, alternative therapies such as ureteroscopy and SWL continue to be advocated despite less successful outcomes because of the lower associated morbidity. Consequently, efforts to reduce the morbidity of PCNL primarily through alterations in tube management have been under way. Pietrow and colleagues performed a prospective, randomized trial of 30 patients undergoing PCNL who received either a 22F nephrostomy tube or a 10F pigtail catheter post-procedure and compared the 2 groups with regard to subjective and objective pain measures, complications and bleeding. Although the stone free rates, complication rates and mean drop in hemacrit were comparable between the 2 groups, visual analog pain scores were consistently lower at 6 hours and 1, 2 and 14 days post-operatively in the 10F group, although only the difference in the 6 hour scores reached statistical significance. Post-operative narcotic requirements were also correspondingly less in the 10F group, but not statistically significantly so.

Based on this study and others, it would seem that the use of a smaller caliber nephrostomy tube results in less early post-operative pain without compromising safety or the ability to return to the operating room for second look flexible nephroscopy. Liasikos and associates (1) additionally noted that the use of a tail stent in conjunction with a small nephrostomy tube compared with a standard 24F re-entry tube reduced urine drainage from the tract as well as produced less pain; however, urine drainage was not assessed in the current study.

Furthermore, avoiding the stent obviates the need for office stent removal and the associated cost and discomfort associated with it. Likewise, a small bore nephrostomy tube has an advantage over a “tubeless” PCNL in that the nephrostomy tract is maintained in the event residual stones are identified on post-operative imaging studies and second-look flexible nephroscopy is needed. Indeed, small-caliber nephrostomy tubes provide the ideal compromise for management of uncomplicated PCNL in that they maintain the nephrostomy tract, maximize comfort and obviate the need for an internal stent.

Reference

1. Liatsikos EN, Hom D, Dinlenc CZ, Kapoor R, Alexianu M, Yohannes P et al.: Tail stent versus re-entry tube: A randomized comparison after percutaneous stone extraction. Urology. 2002; 59: 15-9.

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Stone recurrence predictive score (SRPS) for patients with calcium oxalate stones

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J Urol. 2003; 170: 404-7

Purpose: We developed a convenient, self-administered 8-item stone recurrence predictive score (SRPS) to predict the recurrence of calcium oxalate stones.

Materials and Methods: An 8-item SRPS to predict stone recurrence was developed based on general patient data, including age, sex, urine volume, smoking, wine drinking, family history, stone number and history of gouty arthritis. Mean age of the 204 studied patients with calcium oxalate stones +/- SD was 59.4 +/- 14.5 years (range 24 to 83). The male-to-female ratio was 3:1. Of the patients 115 were recurrent stone formers and 89 were single stone formers. We compared all available general data in the recurrence and control groups.

Results: Family history, stone number, gouty arthritis and SRPS were independent risk factors for stone recurrence. Mean SRPS in recurrent and single stone formers was 7.6 +/- 3.1 and 5.1 +/- 2.0, respectively ($p = 0$). An increase in SRPS had a significant positive correlation with stone recurrence ($r^2 = 0.859$, $p < 0.0001$). At an SRPS cutoff of 7 or greater we achieved 61.7% sensitivity and 75.3% specificity to predict stone recurrence. At an SRPS of 11 or greater we found that 100% of patients had recurrent stones.

Conclusions: With the introduction of the 8-item SRPS we provide a simple, convenient and reliable tool to predict calcium oxalate stone recurrence. Due to the characteristics of the high incidence of stone recurrence thorough metabolic evaluation may be justified in patients with an SRPS of 7 or greater and preventive measures are highly recommended in those with an SRPS of 11 or greater.

Editorial Comment

The efficacy of medical therapy in preventing stone recurrence has been established by several prospective, randomized trials. However, the cost-effectiveness of metabolic evaluation and medical therapy has been questioned, particularly for first-time stone formers. Lee and colleagues attempted to devise a stone recurrence predictive score (SRPS) based on an 8-item questionnaire relating to known stone risk factors that

could stratify risk of stone recurrence and predict patients at high risk of recurrence. From a review of 204 patients followed for 2 to 5 years with radiographic studies and history, a linear regression model was constructed to determine the importance of each factor in predicting stone recurrence. The factors of positive family history, multiple stones, gouty arthritis and SRPS correlated with stone recurrence rate. At an SRPS cut-off level of ≥ 7, the sensitivity and specificity of calcium oxalate stone recurrence is 62% and 75%, respectively.

In this era of limited resources and costly medical care, stratification of risk is critical in order to allow identification of subgroups of patients more likely to suffer a defined event. Metabolic evaluation and indefinite medical therapy is costly. On the other hand, surgery is also costly, but the likelihood of experiencing a stone event requiring surgery is relatively low. As such, prophylactic treatment of patients after their first stone event may not be cost-effective. However if we can identify patients at highest risk of stone recurrence, medical evaluation and treatment in this group would avoid much suffering and expense and would likely justify the cost of treatment. This self-administered questionnaire provides a quick way to stratify patients, and although it will require further retrospective and prospective validation in larger patient groups, it represents a first step towards simple risk stratification.

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ENDOUROLOGY & LAPAROSCOPY

Hellstrom technique revisited: laparoscopic management of ureteropelvic junction obstruction

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Urology. 2003; 62: 404-9

Objectives: To present our experience with the treatment of adult ureteropelvic junction (UPJ) obstruction using a laparoscopic Hellstrom vascular relocation technique.

Methods: Transperitoneal laparoscopy was performed in 35 patients for the management of UPJ obstruction. In 9 cases, we identified crossing lower pole vessels and performed the Hellstrom technique. We discuss our indications, intraoperative techniques, and outcomes when performing only vascular relocation in these patients.

Results: All 9 patients presented with long-standing flank pain and were identified as having UPJ obstruction (7 primary, 2 secondary) on radiographic imaging. The intraoperative decision to perform the Hellstrom technique was based on the presence of the crossing vessels, a grossly normal appearance of the ureter and UPJ, and a small renal pelvis. The crossing vessels were completely mobilized, displaced cephalad, and fixed using intracorporeal sutures. The mean operative time and blood loss was 164 minutes and 15 mL, respectively. At a mean follow-up of 19 months (range 14 to 31), the patients were asymptomatic with no evidence of obstruction on Lasix nuclear renography.

Conclusions: Traditional treatment of UPJ obstruction, with or without crossing vessels, has been accomplished by pyeloplasty. Dismembered pyeloplasty is a standard method in cases of associated crossing vessels; however, we propose that the Hellstrom technique be considered in cases in which the ureter appears normal and the pelvic anatomy is unfavorable for transection and anterior reanastomosis of the ureter and

pelvis. These considerations are particularly relevant during the laparoscopic approach in which intracorporeal suturing and knot tying are technically challenging.

Editorial Comment

This article describes the laparoscopic version of an infrequently used option for repair of ureteropelvic junction obstruction. In the Hellstrom approach to ureteropelvic junction obstruction, pyeloplasty is not performed and instead the anterior crossing vessels are relocated cephalad (a mean of 2.3 cm in this series). Proponents of this technique argue that if there is no intrinsic ureteral obstruction, and the problem is simply anterior crossing vessels that allow the renal pelvis to herniate forward and kink off the ureteropelvic junction, then this "vasculopexy" will solve the problem with less surgical intervention. In an editorial following the article, Dr. Stephen Nakada expressed concern that cases of intrinsic ureteral abnormality might easily be missed with the subjective assessment of the intra-operative appearance of the ureter, and that performing vasculopexy rather than formal dismembered pyeloplasty with anterior relocation of the ureter might risk failure of the procedure. Indeed, the (open surgical) Hellstrom procedure fell out of favor years ago probably because of exactly this problem – it was applied in situations where there was in fact an intrinsic ureteral abnormality. That the authors' intra-operative assessment was accurate enough that their procedure was successful in all nine patients is impressive. Even with my own fairly large experience with laparoscopic pyeloplasty, I would be concerned that I would be unable to make this assessment with a high degree of accuracy in the operating room. The authors cover themselves well in this regard, stating "If one is not completely convinced that the UPJ itself is normal, dismembered pyeloplasty should be performed." A laparoscopic Hellstrom procedure appears to provide a good outcome in properly selected patients – I would just caution the reader that this selection might be very difficult and that the price of incorrect selection (a failed procedure) must be considered very carefully.

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Evaluation of overall costs of currently available small flexible ureteroscopes

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Urology. 2003; 62: 218-22

Objectives: To perform a meta-analysis of the currently available data regarding the durability of flexible ureteroscopes to establish cost estimates for the purchase and use of five currently available, smaller than 9F, ureteroscopes. Healthcare costs have become increasingly germane to the determination of disease management strategies. Improved ureteroscope technology has expanded the role of these instruments. However, the initial purchase costs and high maintenance costs have become problematic with these fragile instruments.

Methods: Ureteroscope durability data on the Storz 11274AA, Olympus URF-P3, Wolf 7325.172, ACMI AUR-7, and ACMI DUR-8 were collected from three prior studies. Combining the durability data and cost data regarding the initial purchase price and maintenance costs of these instruments, we calculated the overall costs associated with the use of each of the ureteroscopes for 25, 50, 75, and 100 cases during the first year (warranties included) and with subsequent use.

Results: The variability in the costs associated with the use of the currently available smaller than 9F ureteroscopes was significant. The initial instrument purchase price, durability, repair costs, and associated warranties all contributed to large discrepancies in the cost of performing ureteroscopy. In this model, during the first year of ownership, the projected cost of performing 100 ureteroscopic cases varied by a difference of 95% depending on the ureteroscope used.

Conclusions. Physicians and institutions that perform ureteroscopy should strongly consider the purchase price, durability, repair cost, and associated warranties before the purchase of small flexible ureteroscopes.

Editorial Comment

The most impressive advances in the surgical treatment of urolithiasis over the past decade have been in ureteroscopy. The holmium:YAG laser is a significantly superior flexible lithotrite, and ancillary instruments such as tip less nitinol baskets and improved ureteral access sheaths have contributed greatly as well. Certainly, however, the most prominent improvements have been with regards to the size and capabilities of flexible ureteroscopes. The 7 to 8F flexible ureteroscopes, with working channels in excess of 3F, allow routine access to all portions of the upper urinary tract. As pointed out in this article, these instruments come at a considerable price. Although the initial purchase price of these ureteroscopes are similar, ranging from $11,995 to $15,000 (USD), there is greater variability in the cost of major repairs, the degree of damage covered by the warranties, and – most importantly – the durability of the scopes. With the exception of the ACMI DUR-8 (the new Storz ureteroscope was not included in this analysis), the other four ureteroscopes have been shown in a previous study to last only 9.4 to 14.5 cases before repair is required. These figures were drawn from a head-to-head comparison of these ureteroscopes published previously, while the durability of the ACMI DUR-8 (25 cases before repair) was obtained from a meeting abstract that examined only that instrument. As such, the markedly improved figure for the DUR-8 could be due in part to other factors, but the concept that durability (as well as repair cost and warranty coverage) makes a large difference in the overall cost of using a small-caliber ureteroscope is valid. The authors give us the very interesting figure “on the basis of consistent data provided by all four manufacturers” that 70% of ureteroscopes sent in for repair have been damaged by user error - usually holmium:YAG laser damage to the working channel. The take-home message is: if you want to minimize the cost of flexible ureteroscopy, then determine the repair cost and warranty coverage of a ureteroscope, consider its reported durability, and be careful with the lithotrite.

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IMAGING

Clinical characteristics of ureteral calculi detected by nonenhanced computerized tomography after unclear results of plain radiography and ultrasonography

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Purpose: Prospective nonenhanced computerized tomography (CT) was performed for patients presenting with renal colic and showing negative or equivocal results on plain x-ray of the kidneys, ureters and bladder (KUB) as well as ultrasonography (US) to evaluate the usefulness of plain CT. We also evaluated the clinical characteristics of urinary calculi detected under such conditions.

Materials and Methods: Between January 2000 and June 2002, 560 patients presented with acute unilateral renal colic. Of these patients 238 negative or equivocal for ureteral calculus on KUB and US underwent nonenhanced CT. The diagnostic value of plain CT in patients with negative or equivocal KUB and US was determined, and results and other clinical findings were compared. Clinical characteristics of ureteral stones detected by plain CT were compared with those of stones diagnosed by KUB and US.

Results: By plain CT 143 (60.1%) and 6 (2.5%) cases of pain were determined to have been caused by ureteral stones and other pathogeneses, respectively. No definitive diagnosis was obtained in 89 (37.4%). Stone size detected by plain CT was significantly smaller than controls (3.77 vs 6.37 mm, $p < 0.0001$) and tended to be located in the middle or lower ureter (76.2% or 109 of 143 vs 52.2% or 168 of 322, $p < 0.0001$). Symptoms spontaneously improved in 137 (95.8%) after conservative therapy while 6 underwent intervention, a rate significantly lower ($p < 0.0001$) than controls (32.9% or 106 f 322).

Conclusions: Nonenhanced CT is a useful modality for diagnosis of patients presenting with acute renal colic but whose results are negative or equivocal on KUB and US. Excretory urography is rarely needed because stones undetected on KUB and US tend to be small and in the middle or lower ureter, and spontaneous passage is expected.

Editorial Comment

Since its introduction, nonenhanced computed tomography (NECT) has become a very important diagnostic tool for detection and characterization of urolithiasis with unprecedented sensitivity, specificity and accuracy. NECT provides also useful information regarding treatment planning (location and size of the calculus) and etiology of several diseases that simulates renal colic. This technology has been shown to have sensitivity of 96% - 100%, specificity of 95.5% - 100%, and accuracy of 96% - 98%. In this study, the authors used NECT for renal colic evaluation only when plain film of the abdomen (KUB) and urinary tract ultrasound were negative or equivocal. Studying a population of 560 patients, they found ureteral stones in 322. Of the remaining 238 patients (42.5%) a definitive diagnosis of ureteral stones by NECT was possible in only 60 % of patients. Although the sensitivity and specificity could not be calculated, it is clear that this rate is too low when compared to previous reports. As already pointed out by the authors, the main reason for their low sensitivity in diagnosing ureteral stone could be explained by different technology employed. In previous report showing higher accuracy, images were obtained at a section thickness of 3 - 5 mm and pitch of 1.0 - 1.8. By using 10 mm slice thickness the authors had lower accuracy rate and also detected larger stones. Another fact that could explain the low yield of NECT in this population is because KUB and US previously detected the majority of larger calculus (mean stone size detected by KUB = 6.37 mm; mean stone size detected by CT 3.77 mm). It is obvious that when NECT is done as the initial diagnostic modality, it will show higher sensitivity and specificity because all sizes of stone will be available for its detection. In other words, the stones will not be previously "filtered" by KUB and US evaluation leaving only the small ones for the CT detection. Although the authors used different technical protocol and presented lower sensitivity rate, this paper is very important because is the first one to show the value of NECT as a complimentary modality for patients with negative or equivocal screening tests (KUB and US).

In many important medical centers around the world, including some in Brazil, spiral NECT has becoming more and more accepted as the primary modality for screening patients with renal colic. Although this procedure has important drawbacks as high dose radiation exposure and for this reason should not be used in children and pregnant patients, it is of great value. In our institution, similarly to many others, NECT for renal

colic has the same cost of an IVP, but economical consideration is still a very important issue. New protocols using less radiation have been already developed. It is expected that in the near future NECT will completely replace IVP for the evaluation of renal colic.

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CT of primary hyperaldosteronism (Conn's syndrome): the value of measuring the adrenal gland

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Purpose: The objectives of our study of patients with primary hyperaldosteronism (Conn's syndrome) were to determine whether the adrenal glands are larger in patients with bilateral adrenal hyperplasia than in those with aldosterone-producing adenomas or in healthy control subjects; and whether a CT criterion based on adrenal gland size can be developed to positively diagnose bilateral adrenal hyperplasia.

Materials and Methods: A retrospective study of CT scans of 28 patients with primary hyperaldosteronism was performed. The means of two observers' measurements of adrenal gland size were recorded and compared with published normal values. In addition, a radiologist experienced in adrenal imaging and unaware of the cause of the primary hyperaldosteronism diagnosed either bilateral adrenal hyperplasia or aldosterone-producing adenoma by visual inspection.

Results: The adrenal glands in patients with bilateral adrenal hyperplasia were significantly ($p < 0.05$) larger than those in patients with aldosterone-producing adenoma or in healthy control subjects. A sensitivity of 100% was achieved when a mean limb width of greater than 3 mm was used to diagnose bilateral adrenal hyperplasia, and a specificity of 100% was achieved when the mean limb width was 5 mm or greater. Receiver operating characteristic curve analysis showed that the overall performance of the radiologist and the mean adrenal limb width in detecting bilateral adrenal hyperplasia were equivalent.

Conclusion: In patients with primary hyperaldosteronism, adrenal limb measurements on CT can aid in differentiating bilateral adrenal hyperplasia from aldosterone-producing adenoma because the adrenal glands in bilateral adrenal hyperplasia are larger.

Editorial Comment

Aldosterone-secreting adrenal adenomas are rare tumors, which are responsible for 75% of primary aldosteronism, with adrenal hyperplasia accounting for 25%. Adrenal hyperplasia may be further subdivided into idiopathic (far more common) and primary adrenal hyperplasia. Aldosteronomas are usually small lesions measuring less than 3 cm in diameter and more frequently found on the left side. CT differentiation between adenoma from bilateral adrenal hyperplasia is not an easy task because primary adrenal hyperaldosteronism may be micronodular or macronodular and also because the adrenal glands may appear normal or diffusely thickened. Thus evaluation with CT in patients with primary aldosteronism has its limitations even in the presence of unilateral adenoma. Difficulties increase much more when both adrenals have a nodular appear-

ance. In some patients with hyperaldosteronism the presence of hyperplasic glands may actually contain unilateral aldosteronoma. This report brings to us new and important radiological signs that might help us in the differentiation between bilateral adrenal hyperplasia from aldosterone-producing adenoma. Differentiating between these two distinct causes is fundamental because an aldosteronoma is usually best treated surgically, whereas bilateral adrenal hyperplasia is treated medically. A specificity of 100% was achieved when a mean limb width of greater than 5 mm was used to diagnose bilateral adrenal hyperplasia.

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UROGENITAL TRAUMA

Recent advances in management of female lower urinary tract trauma

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Purpose of Review: Abdominal and pelvic injuries are often associated with devastating lower urinary tract injuries. The literature is replete with studies involving male lower urinary tract trauma, however the diagnosis and management of similar injuries in women is not as well covered. In this article we will review recent advances in the diagnosis and management of female lower urinary tract trauma.

Recent Findings: The recent literature emphasizes the importance of diagnosing and managing female lower urinary tract injuries, both of the bladder and the urethra, caused by blunt or penetrating trauma to the lower abdomen, pelvis and perineum. Successful management of these injuries is based upon accurate diagnosis, recognition of associated injuries, and prompt treatment. Diagnosis and treatment of female bladder perforation have been well established. Reports of female urethral injuries are scarce, however, and subsequently the management is not standardized.

Summary: High suspicion, accurate diagnosis and prompt treatment are key for the successful management of female lower urinary tract injuries associated with lower abdominal, pelvic and perineal trauma. A standardized algorithm for management of female urethral injuries would be helpful.

Editorial Comment

Female urethral trauma is sufficiently rare that few of us have any significant individual experience. This analysis nicely encapsulates the diagnosis and treatment of both bladder and urethral injuries in women. While the treatment of bladder injuries will be review for many, several aspects of care for female urethral injury bear emphasis. 1)- Urethral injuries in women are far more common in those less than 17 years old. 2)- Index of suspicion should remain high, and hematuria or vaginal bleeding should be evaluated with cystoscopy, even if that is inconvenient in the multi-injured patient. 3)- MRI may be used in females to delineate anatomy before definitive reconstruction, if required. 4)- Repair of severe urethral injury with subsequent fistula or stricture is not yet standardized in the literature. Transfer to a center with experience in this entity may be warranted. Options include first stage Johanson urethroplasty, two stage Johanson urethroplasty, “cut to the light” urethrotomy and dilation, bladder flap urethroplasty, vaginal flap urethroplasty, buccal mucosal onlay

urethroplasty, anastomotic urethroplasty or even bladder neck closure and suprapubic urinary diversion. Surgeons should use the approach they are most comfortable with, awaiting future publications which might better establish the best technique.

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Ureteral injuries from external violence: the 25-year experience at San Francisco General Hospital

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J Urol. 2003; 170: 1213-6

Purpose: We review our 25-year experience with traumatic ureteral injury, for which the approach to management differs from the far more common iatrogenic injury.

Materials and Methods: Review of our trauma data base disclosed 36 patients with 38 ureteral injuries (33 penetrating [24 gunshot, 9 stab wounds] and 5 blunt) from 1977 to 2003, a period during which we treated approximately 4,000 traumatic genitourinary injuries.

Results: The site of injury was the upper ureter in 70%, mid in 8% and distal in 22%. Major intra-abdominal injuries were often associated, but hematuria and hypotension were not consistent findings (75% and 50%, respectively). Excretory urograms performed in 24 patients was diagnostic in only 40%. Computerized tomography and retrograde pyelogram were diagnostic in 4 of 4 and 1 of 1 injuries, respectively (100%). Overall, diagnosis was by radiographic findings in 13 of the 36 injuries (36%) and by laparotomy in 23 (64%). Management was with stenting in 2 patients, primary closure in 12, ureteroureterostomy in 12, ureteroneocystostomy in 5, transureteroureterostomy in 1, Boari flap in 1 and nephrectomy in 1. The complication rate was 18%.

Conclusions: Although traumatic ureteral injury is rare these patients are often critically ill and delay in diagnosis will increase the risk of complications. Contrast enhanced imaging in patients who are not undergoing laparotomy for associated injury should not be limited to those with hematuria and hypotension since these are not entirely sensitive. Most injuries are short segment loss in the upper ureter and can be repaired with debridement and tension-free anastamosis (sic).

Editorial Comment

Ureteral injuries from external violence are rare and few large series exist. An update on the treatment of ureteral strictures from San Francisco General Hospital (which first presented some of these patients in 1989) allows a review of salient principles. It is the largest series yet published on the subject.

There are several relevant points in this paper: 1)- In most series, a significant proportion of the patients have initially missed injuries. In this series only 3/38 had missed injuries (8%). This shows that if the doctors really look, they can decrease the number of missed injuries; 2)- All blunt injury patients need ureteric imaging with computed tomography scan or intraoperative one-shot intravenous pyelogram (IVP) if they have gross hematuria, or microhematuria together with shock, major associated injuries, or deceleration injury; 3)- The authors suggest that if the criteria of flank ecchymosis or flank tenderness is added to the above criteria in cases

of blunt trauma, then detection of ureteric injury is improved (although I wonder how much this would increase the number of CT scans performed in the trauma population…); 4)- All penetrating injury patients need ureteric imaging if they have gross hematuria, microhematuria, or a flank wound; 5)- One shot IVP can be helpful in identifying ureteric injury, but intraoperative inspection of the ureter should still be done if the missile path is close to the ureter; 6)- The authors suggest that patients too unstable to tolerate ureteral repair should have the ureter tied off with silk suture and postoperative percutaneous nephrostomy placed. Definitive delayed repair can be completed later. Interestingly, none of the 38 injured ureters required this approach!; 7)- Most upper and mid ureteral injuries can be treated by minimal debridement and uretero-ureterostomy; 8)- Most distal ureteral injuries should be treated by ureteroneocystostomy; 9)- Some patients with delayed presentation may respond to ureteric stenting at the time of retrograde pyelogram. If not, then open repair will be required.

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PATHOLOGY

Correlation of minute (0.5 mm or less) focus of prostate adenocarcinoma on needle biopsy with radical prostatectomy specimen: role of prostate specific antigen density

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J Urol. 2003; 170: 370-2

Purpose: Few studies have examined the radical prostatectomy followup of a minute focus of adenocarcinoma on prostate needle core biopsy.

Materials and methods: We searched the surgical pathology data base (1999 to 2000) for patients with a minute focus of Gleason score 6 adenocarcinoma (defined as a single focus less than or equal to a 40x microscopic field) who subsequently underwent radical retropubic prostatectomy at our institution. Potentially insignificant tumors were defined as those with a radical prostatectomy tumor volume of less than 0.5 cc, Gleason score 6 or less and organ confined disease.

Results: A total of 54 patients (mean age 58 years, range 45 to 70) were evaluated. The average number of prostate cores per biopsy was 6.3. All had Gleason score 6 by study design. Mean prostate specific antigen (PSA) was 6.0 (range 0.8 to 15). Average tumor volume at radical prostatectomy was 0.39 cc. Of the 54 tumors 24 (44%) were 0.1 cc or less. Two-thirds of the tumors were clinically potentially insignificant. Using a PSA density (PSAD) cutoff of 0.15 we identified 30 of 36 patients (83%) with potentially insignificant tumors. Of those with a PSAD of 0.15 or less with clinically significant tumors, 5 of 6 still had relatively small, organ confined tumors with Gleason score less than 7.

Conclusions: In the era of PSA screening most patients with a minute focus of Gleason score 6 or less adenocarcinoma on needle biopsy had potentially insignificant tumors. However, one-third of patients had clinically significant tumors warranting definitive therapy. The smallest focus of cancer on needle biopsy is not a guarantee of a clinically insignificant tumor. PSAD may have some value within this group in guiding clinicians and patients as to the likelihood of having clinically insignificant tumors.

Editorial Comment

Epstein is the correspondent author of this paper from The Johns Hopkins Hospital. The study evaluated PSA density and pathologic findings in needle biopsies predictive of "insignificant" tumors in radical prostatectomies. In our opinion the term "insignificant" should not be used because it may imply that the tumor should be ignored. This is not the case. It means a minimal cancer judged by a volume of less than 0.5 cc representing an incipient phase either of a clinical or a latent carcinoma. Unfortunately there is not yet a marker for this distinction. A predictive positive value of 83% for minimal cancer (< 0.5 cc) in radical prostatectomy was found using a PSA density (PSAD) cutoff of 0.15 or less and a minute focus of carcinoma in the needle biopsy on one core less or equal to a 40X microscopic field (about 0.5 mm) with no Gleason grade 4 or 5. This kind of study addresses a very important question regarding information to the patient. It is absolutely necessary that the patient be informed by the urologist in this circumstance that there is a probability of 83% for the cancer to be minimal (less than 0.5 cc) in the radical prostatectomy specimen. As a consequence of this fact and depending on how the specimen is processed there is a possibility around 5% to be very hard to find the cancer and even not to be found at all (DiGiuseppe JA et al.: Increasing incidence of minimal residual cancer in radical prostatectomy specimens, Am J Surg Pathol. 1997; 21: 174-8).

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Should each core with prostate cancer be assigned a separate Gleason score?

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Hum Pathol. 2003; 34: 911-4

Background: If multiple biopsy cores contain prostate cancer with differing Gleason scores, should an overall Gleason score be assigned, or should each core be graded separately?

Design: We obtained data on 127 men with prostate cancer on needle biopsy who underwent subsequent radical prostatectomy at our institution. We compared the Gleason scores found on needle biopsy with the grade and stage (organ-confined, extra-prostatic extension, positive seminal vesicles or lymph nodes) at radical prostatectomy.

Results: On biopsy, 40 men had a pure Gleason score of 4 + 3 = 7, 25 men had a Gleason score of 4 + 3 = 7 with a Gleason score of 3 + 3 = 6 on a separate core of the biopsy specimen, 27 men had a pure Gleason score of 4 + 4 = 8, and 35 men had a Gleason score of 4 + 4 = 8 with separate cores containing Gleason pattern grade 3. A Gleason score of 4 + 4 = 8 with pattern grade 3 in other cores had a more advanced stage than a pure Gleason score of 4 + 3 = 7 (P = 0.008). There was no clear pattern analyzing pathological stage of men with a pure Gleason score of 4 + 3 = 7 in comparison with those with Gleason scores of 4 + 3 = 7 and 3 + 3 = 6 in other cores. The group with a Gleason score of 4 + 4 = 8 and Gleason pattern grade 3 on other cores had a higher overall grade on radical prostatectomy than the group with a pure Gleason score of 4 + 3 = 7 (P = 0.001). If one had assigned an overall Gleason score, then a biopsy with Gleason score 4 + 4 = 8 on 1 or more cores and some pattern grade 3 in other cores, would be designated as a Gleason score of 4 + 3 = 7.

Conclusions: Based on our findings, patients with a Gleason score of 4 + 4 = 8 on one or more cores with pattern grade 3 in other cores should be given a final Gleason score of 4 + 4 = 8 instead of 4 + 3 = 7, because these patients are more likely to have higher stage and grade on radical prostatectomy, comparable to

a pure Gleason score of 4 + 4 = 8. Each core should be assigned a separate Gleason score, especially in cases with high Gleason score cancer on at least 1 core.

Editorial Comment

In our Institution each core with prostate cancer is assigned a separate Gleason score, e.g., slide #1: normal prostatic tissue; slide #2: focal atrophy; slide #3: adenocarcinoma Gleason 4 + 4 = 8; slide #4: adenocarcinoma Gleason 3 + 3 = 6; slide #5: focal atrophy; and, slide #6: normal prostatic tissue. This paper answers a frequent question by the urologist. Why assign each core separately instead of an overall Gleason score? In our example the overall Gleason score would be 4 + 3 = 7. Kunz and Epstein answer this question. A Gleason score of 4 + 4 = 8 with pattern grade 3 in other cores had a more advanced stage than a pure Gleason score of 4 + 3 = 7 (p=0.008) and the group with a Gleason score of 4 + 4 = 8 and Gleason pattern grade 3 on other cores had a higher overall grade on radical prostatectomy than the group with a pure Gleason score of 4 + 3 = 7 (p=0.001). The authors conclude that each core should be assigned a separate Gleason score, especially in cases with high Gleason score cancer on at least one core. We fully agree with this conclusion and highly recommend urologists to ask from their pathologists to grade separately each core in case the pathology report is given as an overall Gleason score.

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INVESTIGATIVE UROLOGY

Reperfusion injury of the rat bladder is worse than ischemia

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J Urol. 2003; 170: 2086-90

Purpose: Previous studies have demonstrated that in vivo and in vitro ischemia of the bladder results in decreased contractile responses. However, to our knowledge the effect of reperfusion following ischemia of the bladder is not known.

Materials and Methods: Adult male rats were subjected to bilateral bladder ischemia and varying periods of reperfusion. In vivo ischemia was created for 4 hours by reversibly clamping the 2 vesical arteries for 4 hours. Reperfusion was produced by removing the clamps and allowing the animals to recover for 1 day, 1 week or 1 month after surgery. Following recovery bladders strips were studied using field stimulation (FS), carbachol and KCl. The maximal contractile response and rate of response generated were recorded digitally and analyzed.

Results: The maximal responses to FS, carbachol and adenosine triphosphate (ATP) were not decreased by 4-hour ischemia alone, whereas the response to KCl was decreased significantly. The contractile responses

to FS and KCl were significantly decreased after 1 day and 1 week of reperfusion. Responses after 1 month of reperfusion were increased significantly compared with responses after 1 week of reperfusion. The responses to ATP were not affected by ischemia or reperfusion. The contractile response to KCl was significantly more sensitive to ischemia than the responses to carbachol, ATP or FS, whereas the contractile response to FS was significantly more sensitive to reperfusion than the other forms of stimulation.

Conclusions: This study demonstrates clearly that injury by reperfusion following ischemia is more detrimental than the effects of ischemia alone and FS contraction is the most sensitive form of stimulation to reperfusion damage. This study also demonstrates the ability of the bladder to recover from ischemic and reperfusion injuries.

Editorial Comment

This is a welcome research work on ischemia/ reperfusion injury in urogenital organs. There is increasing evidence suggesting that specific urinary tract dysfunctions are related directly to bladder smooth muscle hypoxia and ischemia. Despite recent understanding of the destructive effects of ischemia the importance of reperfusion injury to the bladder remains unclear. The authors clearly demonstrated that reperfusion injury was more detrimental to neurogenic stimulation than ischemia alone. Also, this study provides evidence that the bladder is able to recover from ischemic and reperfusion injuries.

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The impact of prenatal androgens on vaginal and urogenital sinus development in the female mouse

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J Urol. 2003; 170: 1432-36

Purpose: In females abnormal urogenital virilization can occur secondary to prenatal exposure to exogenous or endogenous androgens. We studied the effects of different doses of prenatal androgens on urogenital sinus development and the location of the vaginal confluence in a mouse model.

Materials and Methods: Timed pregnant C57/6 mice were exposed to 2, 5 and 10 mg testosterone propionate on gestational days 14 through 18. On gestational day 19 the genital tubercles and internal genitalia were examined grossly and histologically for the presence of virilization. Three-dimensional computer reconstruction was done and plastic cast injection molds of the urogenital sinus were made in select specimens.

Results: Microscopic analysis confirmed the spectrum of virilization, which occurred in 98% of testosterone propionate treated female fetuses. Plastic cast injection showed that affected females had a longer urogenital sinus, more proximal confluence and shorter vagina in a dose dependent manner. Histological sections and 3-dimensional reconstruction revealed that the bladder neck moved proximal under the pubic bone, also in a dose dependent manner.

Conclusions: Prenatal exposure to increasing levels of androgen causes urogenital sinus elongation in a female mouse fetus. In the mouse model the confluence area moves proximally together with the bladder neck in a dose dependent manner.

Editorial Comment

It is well known that the development of the male and female internal and external genitalia is dependent on a complex interaction of specific androgenic and nonandrogenic hormones. In this elegant experimental morphological study, the authors analyzed whether the level of the vaginal confluence with the urogenital sinus moves proximal from perineum to bladder neck as a function of prenatal androgen exposure in a mouse model.

The authors found that prenatal exposure to increasing levels of androgen causes a dose dependent change in the confluence of the urogenital sinus and vagina. They observed in this mouse model, a distal elongation of the common urogenital sinus and proximal migration of the bladder neck in respect to the fixed bony structures of the pubic arch. Although the molecular basis of urogenital sinus elongation and migration remains unexplained, the authors speculated that the complex hormonal environment found in patients with congenital adrenal hyperplasia or other abnormalities leading to androgen excess can result in wide spectrum anatomical variations of the vaginal confluence in the urogenital sinus.

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RECONSTRUCTIVE UROLOGY

Robotic assisted laparoscopic sural nerve grafting during radical prostatectomy: initial experience

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J Urol. 2003; 170: 909-12

Purpose: Sural nerve grafting has been done in select patients undergoing radical prostatectomy with unilateral or bilateral wide excision of the neurovascular bundle in an effort to preserve potency. We describe a novel technique of laparoscopic sural nerve grafting after radical prostatectomy using the da Vinci (Intuitive Surgical, Mountain View, California) robot.

Materials and Methods: The procedure was performed successfully in 3 potent men 48, 49 and 59 years old, respectively. In patient 1 the entire procedure was performed robotically using a 6 port transperitoneal approach. In patients 2 and 3 the robot was used only for sural nerve grafting and urethrovesical anastomosis, while radical prostatectomy was performed by conventional laparoscopy. After the completion of radical prostatectomy with deliberate wide resection of the 2 neurovascular bundles in patients 1 and 3, and unilateral excision of the left neurovascular bundle in patient 2 a plastic surgery team harvested 10 to 15 cm of sural nerve from the left calf. Sural nerve grafts were interposed robotically by placing 4 to 6 interrupted perineural stitches of 6 or 7-zero polypropylene sutures.

Results: Mean operative time was 6.5 hours, mean blood loss was 216 cc and mean hospital stay was 2.3 days. Surgical margins were focally positive at the apex in the patients 1 and 3. During a followup of 7, 5 and 1 months patient 1 reported penile engorgement with sildenafil not sufficient for penetration, patient 2 with unilateral nerve preservation was potent without any medication and patient 3 did not achieve any degree of erection, respectively.

Conclusions: The da Vinci remote robotic system technically facilitates sural nerve grafting during laparoscopic radical prostatectomy. Long-term potency data are essential to validate the technical success.

Editorial Comment

Many pitfalls of laparoscopic surgery in recent years have been tried to overcome with the assistance of computerized robots. In the current paper an experienced group of laparoscopic surgeons from the Cleveland Clinic Foundation tried to laparoscopically reconstruct the peri prostatic autonomic nerve system resected during laparoscopic radical prostatectomy. In addition to optical magnification and illumination provided by normal endoscopic surgery they also took advantage of the da Vinci computerized robotic system enabling them to suture the nerve transplants with three dimensional magnification, improved manual dexterity, movement scaling and tremor elimination. In the few cases in which the autonomic nerve reconstruction was performed they achieved both a surgical and functional success.

The success is remarkable in several aspects. A procedure which requires otherwise microscopic or lens magnification if done in an open fashion and which requires special skills because of the depth and illumination of the operating field can be done laparoscopically this circumventing these problems. Furthermore functional restoration of potency was achieved despite the fact that sural nerve interposition was thought to be an unlikely successful method for re-innervation of the extremely fine and branching autonomic nerve fibers. What we definitely see in this paper is the possibility to perform laparoscopic surgery by benefiting from the endoscopic magnification and illumination in conjunction with the improved dexterity of robots. What still needs clarification is whether sural nerve grafting is really responsible for potency preservation or whether young age as in these patients, anatomical variations in autonomic nerves, or possible alternative physiological pathways for maintaining erections could be an explanation for the favorable results.

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Robotic-assisted laparoscopic radical cystectomy and intra-abdominal formation of an orthotopic ileal neobladder

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Purpose: To describe our technique of robotic-assisted laparoscopic radical cystectomy and intra-abdominal formation of an orthotopic neobladder (Hautmann) for treatment of transitional cell carcinoma of the bladder.

Methods: We describe our surgical technique in the worldwide first attempt to perform a robotic-assisted laparoscopic radical cystectomy and completely intra-abdominal formation of an orthotopic neobladder. The DaVinci System™ (Intuitive Surgical, Mountain View, CA, USA) was utilized to perform the procedure.

Results: Utilizing the DaVinci System the operation could be performed without any complications. Operating time was 8.5 hours, blood loss was 200 ml. The oncologic as well as the functional result of the reservoir were excellent.

Discussion: We here demonstrated that sophisticated laparoscopic procedures like the intra-abdominal formation of an orthotopic neobladder are accomplishable with robotic assistance.

Editorial Comment

Over the recent years experience with laparoscopic tumor ablation in urology has been increasing. In many centers worldwide adrenalectomy, total or partial nephrectomy and radical prostatectomy are now regularly performed. Although reports on radical cystectomy do exist, this procedure has always been thought to be problematic for minimal invasive surgery due to the necessity of a subsequent reconstructive urinary diversion.

In this paper by Beecken et al., the authors have managed to perform a laparoscopic radical cystectomy and an orthotopic ileal neobladder completely intracorporeally. Contrary to other reports the type of urinary diversion was similar to the urinary diversion used by open surgery. The difference lies in a different sequence of the procedure mainly for the neobladder. Although the time to perform such a procedure is respectable compared to some previous reports, it is still considerably longer than experienced surgeons would necessitate for an open procedure. Furthermore an expensive and sophisticated computerized robotic system available only in a few centers worldwide was used and most probably accounted for the success. It shows however that laparoscopic radical cystectomy and an orthotopic ileal neobladder will be improved with the development of new tools and that we are faced with the fact that in several years from now centers of excellence may perform also this procedure less invasive, and probably in a comparable time period. The increased cost of such equipment will have to be equated with reduced patients' hospitalization, morbidity and earlier return to work.

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UROLOGICAL ONCOLOGY

Long-term followup of a randomized trial of 0 versus 3 months of neoadjuvant androgen ablation before radical prostatectomy

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Purpose: In 1992 we initiated a national randomized prospective trial of 3 months of cyproterone acetate before radical prostatectomy compared to prostatectomy alone. Initial results indicated a 50% decrease in the rate of positive surgical margins. This decrease did not translate into a difference in prostate specific antigen (PSA) progression at 3 years. This report is on the long-term outcome (median followup 6 years) of this cohort.

Materials and Methods: This prospective, randomized, open label trial compared 100 mg cyproterone acetate 3 times daily for 3 months before surgery to surgery alone. Randomization occurred between January 1993 and April 1994. Patients were stratified according to clinical stage, baseline serum PSA and Gleason sum.

A total of 213 patients were accrued. Biochemical progression was defined as 2 consecutive detectable PSAs (greater than 0.2 ng/ml) at least 4 weeks apart, re-treatment or death from prostate cancer.

Results: A total of 34 (33.6%) patients undergoing surgery only and 42 (37.5%) patients given neoadjuvant hormone therapy (NHT) had biochemical recurrence during the median followup of 6 years. Despite the significant pathological down staging in this study, there was no significant difference in number of patients with no evidence of biochemical disease (bNED) survival ($p = 0.732$). A bNED survival benefit favoring NHT was seen in men with a baseline PSA greater than 20 ($p = 0.015$).

Conclusions: After 6 years of followup there was no overall benefit with 3 months of NHT. Improved bNED survival was seen in the highest risk PSA group (PSA greater than 20). The possibility that high risk patients may benefit from NHT warrants further investigation.

Editorial Comment

Once upon a time, neoadjuvant hormonal therapy before prostatectomy was a hit on our congresses. We were told that surgical margins were less positive, and we should do that in every case. After several years now this claim is indeed history. Neoadjuvant hormonal therapy before prostatectomy did not translate in improved survival. With regard to side effects and the psychological impacts of this therapy on men this should not be advocated anymore.

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A seven-year follow-up of men following a benign prostate biopsy

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Objectives: To determine the incidence and clinical relevance of newly diagnosed cases of prostate cancer in a group of men who had an elevated PSA and benign prostate biopsy 7 years previously.

Patients and Method: Patients under the age of 80 years with an elevated PSA who had had a benign prostate biopsy in the 12 months between March 1, 1994 and February 28, 1995 were studied. One hundred and sixty four patients with a mean age of 66.8 years (range 47 - 79 years) were identified. The mean PSA for this group was 10.3 ng/ml (range 4.1 - 81 ng/ml). One hundred and fifty nine of the 164 (97%) hospital records were available for review and all but 21 (12.8%) of the General Practitioners were contacted.

Results: Eighteen (11%) of the original 164 patients were subsequently diagnosed with prostate cancer, 2 died from their disease.

Conclusions: In a population where the follow-up of patients with a benign biopsy was arranged on clinical grounds alone, 11% of the study group was diagnosed with prostate cancer during a seven-year follow-up. Although some of these cancers appear to be slow growing, most of those diagnosed in the initial follow-up period were deemed to be clinically significant and a small proportion progressed rapidly to metastases. All patients who have an elevated PSA, but benign biopsy, should undergo a period of PSA monitoring until it is clear that their PSA is not rising. We propose an initial intensive monitoring period to avoid missing those with clinically aggressive disease.

Editorial Comment

Transrectal ultrasound guided biopsy of the prostate is not 100% sensitive and the false negative biopsy rate is estimated at 20 - 30 %. Only few papers address these missed cases and therefore, this contribution is worthwhile reading. 164 patients had negative biopsy of their prostate. 40% underwent TURP, and of these 69 underwent 1 or 2 TURPs. 7 of these patients had cancer. 53 patients had one or more TRUS biopsies, 13 were found with cancer. Interestingly, of the 18 patients diagnosed with prostate cancer, 3 were diagnosed within 12 months of their initial biopsy. 3 patients were found to have bone metastasis at this time, indicating an aggressive disease.

With these results in background the authors concluded correctly, that all patients, who have a suspicious PSA, but a negative biopsy should undergo an intensive monitoring period and PSA monitoring until it is clear that PSA is not rising.

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FEMALE UROLOGY

Comparative assessment of maximal bladder capacity, 0.9% NaCL versus 0.2 M KCL, for the diagnosis of interstitial cystitis: a prospective controlled study

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Purpose: Increased urothelial permeability has been proposed as a cause of interstitial cystitis (IC). The potassium sensitivity test assesses bladder discomfort after instillation of 0.4 M KCL for identification of increased urothelial permeability. Since exposure to 0.4 M KCL may be extremely painful for patients with IC we investigated a less traumatic alternative.

Materials and Methods: The study comprised 38 controls and 40 patients with IC. In all subjects cystometry was performed with 0.9% NaCL followed by 0.2 M KCL, and filling volume at first urge and maximum bladder capacity (Cmax) were assessed for both solutions.

Results: Controls did not show a significant change in Cmax. KCL decreased Cmax in 37 of 40 (92%) patients with IC with a mean decrease of 30%. The examination was painless in all controls and in 33 of 40 (82%) patients with IC, and was moderately painful in 7.

Conclusions: For demonstration of increased potassium sensitivity and diagnosis of IC, comparative assessment of Cmax is a well tolerated alternative to the 0.4 M potassium sensitivity test. Statistical evaluation of these results suggests that a decrease in Cmax greater than 30% is indicative of IC.

Editorial Comment

The authors evaluate the value of diagnostic testing for interstitial cystitis by comparing cystometry changes using a 0.2 M KCL instillation solution as opposed to a standard potassium sensitivity test using an instillation of 50 cc of 0.4 M KCL. The authors compared two groups of patients: 40 female patients with

interstitial cystitis and 38 control patients. Interstitial cystitis patients had been diagnosed using the National Institute of Health / National Institute for Diabetes and Digestive and Kidney Diseases criteria for IC. Both the control and IC group underwent standard cystometry using 0.9% NaCL solution then drained and retested with 0.2 M KCL at a rate of 50 cc/min. At the end of this, all patients underwent a potassium sensitivity test (PST) with instillation of 50 cc 0.4 M KCL. The authors then looked at changes in maximum capacity between the cystometry utilizing normal saline and those with 0.2 M KCL compared the differences between the groups of controls and patients with interstitial cystitis. Using a cutoff of a 30% maximum capacity reduction, the test was found to have a sensitivity of 73% and a specificity of 83% to confirm the diagnosis of interstitial cystitis.

This is a valuable article in view that it expands the horizons of testing for evaluation of interstitial cystitis. The potassium sensitivity test is more of a static subjective test as it is based on the patient's ability to respond if there is an increase of pain or not. The urodynamics test allows the physician to observe a more quantitative change in bladder sensation and capacity secondary to the instillation of KCL solution and then deduce whether the patient has the diagnosis of IC. To truly appreciate this article, one must accept the validity of the KCL sensitivity test as truly diagnostic of interstitial cystitis. Potential difficulties may arise in the patient's changed or altered response to a second urodynamics test in a short period of time. On the second cystometry, the patient has the potential to anticipate the various parameters and thus change the important parameters of testing. In addition, it is unclear what the effects of two cystometrograms will then have on a subsequent PST. Nevertheless, in view of the difficulty of therapy of this disease and its multi-factorial nature, any test that will help shed light upon this difficult diagnosis is of true value; the method of cystometry described in this article is one such test.

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Urodynamic verification of an overactive bladder is not a prerequisite for antimuscarinic treatment response

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BJU Int. 2003; 92: 415-7

Objective: To investigate the place of urodynamics in the evaluation of patients with symptoms of the overactive bladder by comparing the response to antimuscarinic therapy in those with and with no urodynamically verified symptoms.

Patients and Methods: In a prospective observational study, 356 female patients with urinary frequency (> 8 voids/24 h) and urgency, with or without urge incontinence, underwent cystometry. Patients were diagnosed with detrusor instability if there were spontaneous uninhibited increases in detrusor pressure during bladder filling. All patients regardless of urodynamic findings were subsequently treated with oxybutynin 2.5 mg twice daily and bladder retraining. The outcome was evaluated as the change in urinary frequency and incontinence episodes after 6-8 weeks of treatment.

Results: Among 352 evaluable patients, 266 (75%) had detrusor instability on cystometry and the remainder did not. There was no significant between-group difference in mean age, urinary frequency or the number of incontinence episodes at presentation. Both groups improved equally well during oxybutynin and bladder retraining therapy; after 6-8 weeks there was no significant between-group difference for the mean change from baseline in urinary frequency or incontinence episodes. Tolerability profiles were comparable to the two groups.

Conclusion: Patients with symptoms of an overactive bladder, but apparently normal urodynamic findings, respond equally well to antimuscarinic therapy as those with urodynamically verified symptoms. Such findings cast further doubt on the clinical validity of using invasive urodynamic procedures to characterize patients with irritative lower urinary tract symptoms before starting antimuscarinic therapy.

Editorial Comment

The authors performed a prospective observational study of 356 female patients who reported to their office with urinary frequency and urgency with or without urge incontinence. The authors performed cystometry on the patients and identified those patients with detrusor instability on cystometry and those who did not have detrusor instability. Regardless of cystometric findings, both groups of patients were treated with oxybutynin 2.5 mg twice daily and bladder retraining. Response to therapy was then evaluated for both groups with the results indicating no significant difference between the groups for the mean change from baseline in urinary frequency or incontinence episodes. The conclusion of the authors is secondary to the symptomatic response of patients with apparently normal urodynamic findings; an examination of the value of urodynamics prior to instituting antimuscarinic therapy should be entertained.

The authors raise a valuable point in discussing the need for pretreatment testing in the therapy of the overactive bladder. That a significant number of patients had no detrusor instability on cystometry but still responded to oxybutynin is not surprising; for as Dr. Edward McGuire stated “A routine cystometrogram used to make the diagnosis of detrusor instability is a blunt instrument: if negative, it does not rule out the condition” (1). To put it in other words, that a patient with detrusor instability has a negative CMG is not unusual in view that 50% of patients with motor urgency have a negative CMG. In addition, secondary to this noted phenomenon, there are numerous tactics described in the literature to help increase the cystometric yield rate including a rapid fill (> 100 cc/min) or if the patient is asked not to try to void or prohibit micturition during the filling phase (2). In view of the accepted limits of cystometry, it is clear that this article helps us remember that cystometry does not take the place of clinical judgment but is merely another tool to help clarify the patient’s diagnosis prior to instituting therapy. Is it needed absolutely in all cases of OAB? No. Should it be considered by the specialist in complex cases? Yes.

References

1. McGuire EJ: Bladder instability and stress incontinence. Neurourol Urodyn. 1988; 7: 563-7.
2. Blaivas JG, Groutz A, Verhaaren M: Does the method of cystometry affect the incidence of involuntary detrusor contractions? A prospective randomized urodynamic study. Neurourol Urodyn. 2001; 20: 141-5.

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PEDIATRIC UROLOGY

A nurse led education and direct access service for the management of urinary tract infections in children: prospective controlled trial

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BMJ. 2003; 327: 656

Objectives: To determine whether a nurse led education and direct access service improves the care of children with urinary tract infections.

Design: Prospective cluster randomised trial.

Setting: General practitioners in the catchment area of a UK paediatric nephrology department.

Participants: 88 general practices (346 general practitioners, 107,000 children).

Main outcome measures: Rate and quality of diagnosis of urinary tract infection, use of prophylactic antibiotics, convenience for families, and the number of infants with vesicoureteric reflux in whom renal scarring may have been prevented.

Results: The study practices diagnosed twice as many urinary tract infections as the control practices (6.42 v 3.45/1000 children/year; ratio 1.86, 95% confidence interval 1.42 to 2.44); nearly four times more in infants (age < 1 year) and six times more in children without specific symptoms. Diagnoses were made more robustly by study practices than by control practices; 99% v 89% of referred patients had their urine cultured and 79% v 60% had bacteriologically proved urinary tract infections (P < 0.001 for both). Overall, 294 of 312 (94%) children aged under 4 years were prescribed antibiotic prophylaxis by study doctors compared with 61 of 147 (41%) by control doctors (P < 0.001). Study families visited hospital half as much as the control families. Twice as many renal scars were identified in patients attending the study practices. Twelve study infants but no control infants had reflux without scarring.

Conclusion: A nurse led intervention improved the management of urinary tract infections in children, was valued by doctors and parents, and may have prevented some renal scarring.

Editorial Comment

Despite advances in medical knowledge, many primary care physicians fail to diagnose urinary tract infections in children promptly. The authors studied whether a nurse assigned specifically to educate primary care physicians on the indications for urine tests and on whom to evaluate potential infections could effect a change in clinical practice among primary care physicians.

Indeed, compared to control primary care practices, those educated by the nurse diagnosed twice as many urinary tract infections (and 4 times more in infants). The diagnosis was made using cultures more often and similarly antibiotic prophylaxis was more frequently used. Interestingly, more renal scars were identified in the children treated by the primary care physicians who had been educated. The authors conclude that the management of urinary tract infection was improved by the nurse-led intervention.

It is intuitively obvious that more aggressive diagnosis is beneficial. However, despite the fact that the education program clearly led to more diagnosis of infections and renal scarring, it remains to be shown that there is really a health benefit to this more aggressive program. Furthermore, costs in this group were clearly higher. It seems that longer follow-up will be needed to determine if there are truly benefits to this aggressive education program.

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Kidney transplantation in children: impact of young recipient age on graft survival

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Nephrol Dial Transplant. 2003; 18: 2141-6

Background: It has been suggested that recipient age may have an effect on renal graft survival due to its potential influence on the competence of the immune system. A comparison of graft survival between children and elderly adults, however, has never been performed.

Methods: Forty patients ≤ 18 years old were included in the study group and compared with a control group of patients ≥ 65 years using a case-control analysis. Apart from age, matching criteria were the number of HLA mismatches and the date of transplantation.

Results: The mean age differed by 57 years between study and control group (10 +/- 5 vs 67 +/- 2, P < 0.001). There was no difference in the number of initially non-functioning grafts, sex distribution, immunosuppression, number of HLA mismatches on the HLA-DR, -B and -A locus, cold ischaemia time and the number of patients with panel-reactive antibodies. The only difference was a lower donor age in the study group (17 +/- 14 vs 35 +/- 16, P < 0.001) compared with the control group. During the follow-up of 109 +/- 54 and 79 +/- 49 months, respectively, acute rejections were more frequent in the study group (25 vs 12, P < 0.01). There was no significant difference in graft survival between both groups when death with functioning graft was excluded.

Conclusions: This study which compares two groups of patients with a mean age difference of 57 years could not demonstrate an effect of young recipient age on graft survival, though the incidence of acute rejections appeared to be significantly higher in the paediatric population. Thus paediatric renal transplanted patients do not seem to have a disadvantage regarding graft survival due to their young recipient age.

Editorial Comment

Renal failure is being seen with increasingly frequency in young children. Most of them stay on dialysis for a relatively short period of time and are treated with renal transplantation as soon as feasible. The technical challenges of transplanting into small recipients are considerable and well recognized. What has not been well assessed is whether immunological differences make rejection more common in pediatric recipients.

In this study, the results of renal transplantation in 40 pediatric recipients were compared with those seen in a control group of adults > 65 years of age. Interestingly, the children suffered twice as many episodes of acute rejection as the adults, but when death with a functioning graft was excluded from the analysis, graft survival was virtually identical. Hence, even though there may be an increased immunocompetence in children, the rate of survival of renal transplantation is the same as in adults. It remains to be seen whether more aggressive immunosuppression in children would be useful.

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