International Braz J Urol
Official Journal of the Brazilian Society of Urology
Vol. 30 (3): 245-267, May - June, 2004

UROLOGICAL SURVEY

FRANCISCO J.B. SAMPAIO
Urogenital Research Unit
State University of Rio de Janeiro (UERJ), Brazil

EDITORIAL COMMITTEE

STONE DISEASE

Association of urinary pH with body weight in nephrolithiasis

Maalouf NM, Sakhaee K, Parks JH, Coe FL, Adams-Huet B, Pak CY
Center for Mineral Metabolism and Clinical Research, University of Texas Southwestern Medical Center, Dallas, Texas 75390, USA
Kidney Int. 2004; 65: 1422-5

Background: The prevalence of kidney stone disease in the United States is progressively increasing, paralleling the growing rate of obesity. Uric acid nephrolithiasis, a condition associated with a low urinary pH, has been linked to obesity and insulin resistance. Based on these observations, we hypothesized that urinary pH may be inversely associated to body weight in nephrolithiasis.

Methods: Data were retrieved from 4883 patients with nephrolithiasis who underwent ambulatory evaluation at two established stone clinics in Dallas and Chicago. The patients collected 24-hour urine samples on an outpatient basis, while avoiding any drug that could alter urinary pH. Patients were divided in increasing sextiles of body weight, and urinary pH was adjusted for urinary creatinine and for age.

Results: Urinary pH had a strong, graded inverse association with body weight. Urinary creatinine and age were both found to be significant covariates of urinary pH, while gender was not a significant independent variable after adjustment for urinary creatinine. Mean 24-hour urinary pH, adjusted for age and urinary creatinine, were 6.09, 6.04, 6.01, 5.99, 5.97, and 5.91 for sextiles of body weight in increasing order from Dallas (P for linear trend < 0.0001), and 6.18, 6.10, 6.04, 6.02, 5.97, and 5.88 for the sextiles from Chicago (P for linear trend < 0.0001).

Conclusion: We conclude that urinary pH is inversely related to body weight among patients with stones. The results confirm the previously proposed scheme that obesity may sometimes cause uric acid nephrolithiasis by producing excessively acid urine due to insulin resistance.

Editorial Comment

For those of us who treat a lot of stones and have a large referral practice for obese stone-forming patients, the observation that many of these patients have uric acid stones is no surprise. On the surface many of us have assumed that the high incidence of uric acid stone disease was due to overindulgence in salt, meat and dairy leading to low urine pH and high urinary uric acid. However, the group from Dallas has postulated a novel pathophysiologic mechanism for uric acid stone formation (1). By their theory, the acidic urine seen in obese uric acid stone formers is attributed to insulin resistance in the kidney, which leads to decreased renal ammonia excretion and subsequent reduced urinary buffering capacity, thereby causing an acidic urine.

In the current study, patient databases from 2 of the largest metabolic stone clinics in the country were searched to establish the relationship between urine pH and body weight in a large group of stone patients. A strong, inverse association was found between urine pH and body weight, a relationship which held even after adjustment for a variety of potential confounding factors. Interestingly, after adjustment for urinary sulfate, a marker for animal protein intake, the strong inverse association persisted, suggesting that that the mechanism is independent of diet and not simply a result of dietary indiscretion. Indeed in their seminal work, the investigators confirmed low urine pH in obese uric acid stone patients maintained on a controlled metabolic diet.

These findings support the insulin resistance-mediated mechanism of increased urinary acidity in obese patients. Therefore, it is hoped that with weight loss (and dietary modification), insulin-resistance may be reversible and urinary acidity can be returned to normal, thereby reducing the risk of stone formation.

Reference

1. Sakhaee K, Adams-Huet B, Moe OW, Pak CY: Pathophysiologic basis for normouricosuric uric acid nephrolithiasis. Kidney Int. 2002; 62: 971-9

Dr. Margaret S. Pearle
Associate Professor of Urology
University of Texas Southwestern Med Ctr
Dallas, Texas, USA

Safety and efficacy of percutaneous nephrolithotomy in patients with neurogenic bladder dysfunction

Rubenstein JN, Gonzalez CM, Blunt LW, Clemens JQ, Nadler RB
Department of Urology, Northwestern University Feinberg School of Medicine, Chicago, Illinois, USA
Urology. 2004; 63: 636-40

Objectives: To review our experience performing percutaneous nephrolithotomy (PNL) on patients with neurogenic bladder dysfunction with special attention paid to the risks of surgical complications and stone recurrence. Patients with neurogenic bladder dysfunction with or without urinary diversion are at increased risk of urolithiasis, surgical complications, and recurrent stone disease.

Methods: We retrospectively reviewed the 23 patients with neurogenic bladder dysfunction who underwent PNL at our institution. Neurologic lesions included spina bifida, traumatic spinal cord injury, exstrophy/epispadias, neonatal meningitis, stroke, and spine chondrosarcoma. Bladder management included ileal conduit (n = 8), intermittent catheterization (n = 7), indwelling catheter (n = 7), and ureterosigmoidostomy (n = 1).

Results: We performed 100 procedures on 47 renal units (17 bilateral, 7 with recurrent stones). Urinary tract infection/colonization was seen in 21 of 23 patients, most of whom had more than one organism. The stone-free rate was 96%. Six patients required three or more procedures, each had a complete staghorn calculus. In an average of 36 months of follow-up, 10 patients (46%) had recurrent stone disease requiring intervention, and 5 patients (23%) underwent repeat PNL. The stone composition analysis revealed mainly infection-related stones.

Conclusions: PNL in patients with neurogenic voiding dysfunction is safe and effective, with outcomes comparable to that of patients without such lesions. The complication rate is small but statistically significant. It is important to obtain adequate urine cultures, because renal pelvis and bladder culture data may differ and affect the outcome. Risk factors for recurrent stone disease include a high spinal cord lesion, indwelling urinary catheter, and ureterosigmoidostomy.

Editorial Comment

Patients with neurogenic bladders with or without urinary diversion have a high incidence of chronic urinary tract infections and stones. Results with shock wave lithotripsy have been disappointing with regard to stone free rates and recurrent stone disease. As such, many of these patients are best managed with percutaneous nephrostolithotomy (PCNL). Unfortunately, infectious and other complications are common in this patient population.

Nadler and colleagues reviewed their series of 23 patients with neurogenic bladder dysfunction who underwent 100 PCNL procedures on 47 renal units to assess success and complication rates. With aggressive second look flexible nephroscopy in all but 2 patients, an impressive stone free rate of 96% was achieved. Moreover, despite documented urinary tract infection in 91% of patients, only one case of urosepsis occurred,

after initial percutaneous access. The authors attribute their low infectious complication rate to pre-operative treatment of positive urine cultures, percutaneous access and collecting system drainage the day prior to PCNL and aggressive culture-specific intravenous antibiotics after drainage. However, despite their high stone free rate, recurrent stones occurred in 46% of patients within 36 months.

This study highlights the potential complications of treating stones in this patient population as well as the high rate of recurrence despite a stone free state. However, it is encouraging that with careful pre- and intra-operative measures, complication rates can be minimized. While the practice of routinely obtaining percutaneous access a day or more prior to the procedure has never been shown in controlled trials to reduce infectious complications, and I personally have not adopted this practice, it does allow renal pelvic urine to be assessed prior to initiating lengthy manipulation of the urinary tract. In addition, although the authors advocate oral antibiotics for 2 days prior to admission, I favor a more prolonged course of 1-2 weeks of culture specific antibiotics to assure at least superficial sterilization of the urinary tract.

Dr. Margaret S. Pearle
Associate Professor of Urology
University of Texas Southwestern Med Ctr
Dallas, Texas, USA

ENDOUROLOGY & LAPAROSCOPY

Use of a ureteral access sheath to facilitate removal of large stone burden during extracorporeal shock wave lithotripsy

Okeke Z, Lam JS, Gupta M
Department of Urology, New York-Presbyterian Hospital, Columbia University College of Physicians and Surgeons, New York, New York, USA
Urology 2004; 63: 574-576.

Large renal stone burdens within a nondilated collecting system in patients with a relative contraindication to percutaneous nephrolithotomy can be a challenging problem. We describe a novel technique using a ureteral access sheath combined with extracorporeal shock wave lithotripsy to facilitate passage of stone fragments in such patients.

Editorial Comment

A ureteral access sheath is a hollow sheath that is placed with an obturator over a wire into the ureter. After removing the obturator, the sheath allows rapid placement and removal of ureteroscopes and improves irrigant outflow. The internal diameter of the devices ranges from 9.5 to 16 F, with lengths from 20 to 55 cm. Although ureteral access sheaths have been available for many years, they did not become popular until some modifications by Applied Medical (Rancho Santa Margarita, CA, USA) made them easier to insert and more rigid. Further modifications by Applied and then others - there are now sheaths available from at least 3 other companies - have included additional kink resistance, hydrophilic coatings, extra channels for guidewires, and improved obturators. Many endourology experts have advocated their routine use in all flexible ureteroscopic procedures, to ease ureteroscope passage, minimize pressure in the upper tract, and facilitate rapid removal and re-insertion of the ureteroscope for fragment or biopsy retrieval. Others use them only for specific indications. I consider them to be most useful when there is a good reason to remove stone fragments rather than simply

fragmenting the stone ureteroscopically and depending on spontaneous fragment passage. This typically is the case when renal drainage is poor (i.e., very dependent and dilated lower pole) and even small fragments are unlikely to pass, or if the stone burden is very large and the sheer volume of fragments might be problematic. Okeke and associates found a novel use for a ureteral access sheath in the setting of large stone burden, in that they positioned the end sheath just inside the ureteropelvic junction to facilitate active irrigation of fragments during shock wave lithotripsy, with the end result being that many of the fragments washed out of the kidney during the procedure. Given the large stone burden, the stone free result in the patient were excellent. The operative time is not provided, although I imagine that the procedure was fairly tedious. I have used a similar technique during ureteroscopic treatment of large renal stones, in patients whom, for one reason or another, were not candidates for percutaneous stone extraction. In cases where active clearance of fragments is desired, a ureteral access sheath is a useful adjunct in endourological management.

Dr. J. Stuart Wolf Jr.
Associate Professor of Urology
University of Michigan
Ann Arbor, Michigan, USA

Long-term results of laparoscopic retroperitoneal lymph node dissection: a single-center 10-year experience

Steiner H, Peschel R, Janetschek G, Holtl L, Berger AP, Bartsch G, Hobisch A
Department of Urology, University of Innsbruck, Innsbruck, Austria
Urology 2004; 63: 550-5

Objectives: To evaluate the feasibility, morbidity, and long-term oncologic efficacy of laparoscopic retroperitoneal lymph node dissection (L-RPLND) in patients with nonseminomatous germ cell tumor (NSGCT).

Methods: L-RPLND was performed 188 times in 185 patients; 114 procedures were performed for Stage I NSGCT and 6 procedures for tumor marker-negative clinical Stage IIA disease. In the case of positive lymph nodes, adjuvant cisplatin-based chemotherapy was administered. After chemotherapy, L-RPLND was performed for retroperitoneal Stage IIA (10 patients), IIB (43 patients), and IIC lesions (15 patients).

Results: The mean operative time was 256 minutes for Stage I and 243 minutes for Stage II; the conversion rate was 2.6%. The mean blood loss was 159 mL in patients with Stage I and 78 mL in those with Stage II disease. Active tumor was found in 19.5% of patients with Stage I lesions and in 50% of patients with tumor marker-negative clinical Stage IIA disease. After chemotherapy, active tumor was found in 1 patient with Stage IIC disease and mature teratoma in 38.2% of patients. The mean postoperative hospital stay for those with Stage I and II disease was 4.1 and 3.7 days, respectively. Antegrade ejaculation was preserved in 98.4% of patients. The mean follow-up was 53.7 months for those with Stage I and 57.6 months for those with Stage II disease. All but 6 patients have remained free of relapse, and no patient died of tumor progression.

Conclusions: The rate of tumor control after L-RPLND and the diagnostic accuracy of L-RPLND were equal to the open procedure, and the morbidity was significantly lower. Therefore, L-RPLND for Stage I and low-volume retroperitoneal Stage II disease can be performed at centers with experience in urologic laparoscopy and oncology.

Editorial Comment

With the recent explosion of interest in laparoscopic prostatectomy and laparoscopic partial nephrectomy, with virtually every paper stating that these procedures should be performed only by those with “advanced

laparoscopic experience," the challenge of laparoscopic retroperitoneal lymph node dissection (L-RPLND) is often overlooked. I agree with the authors that a left-sided L-RPLND for Stage I nonseminomatous germ cell tumor (NSGCT) is the best way to start off. The left-sided template is smaller, the aorta is more forgiving, and the midline does not need to be crossed. There is controversy about the right-sided template, however. For those who feel that the right-sided dissection should be carried all the way to the contralateral renal hilum, completing this dissection laparoscopically without repositioning is difficult. It would have been nice if the authors had given us data on operative time, complications, and conversions for right vs. left procedures - I would guess that the right-sided ones were more challenging and dangerous. Disagreements about extent of the template aside, the authors' data are very reassuring as to the completeness of the dissection for Stage I disease. Of 91 patients with negative dissections, only one suffered a retroperitoneal recurrence. This suggests that the dissection by the authors is thorough. Certainly, their data regarding complications and conversions are excellent. L-RPLND should be considered an excellent option when there is "advanced laparoscopic experience."

Dr. J. Stuart Wolf Jr.
Associate Professor of Urology
University of Michigan
Ann Arbor, Michigan, USA

IMAGING

Adrenal neoplasms: CT-guided radiofrequency ablation - preliminary results

Mayo-Smith WW, Dupuy DE
Department of Radiology, Rhode Island Hospital, Brown Medical School, 593 Eddy St, Providence, RI 02903, USA
Radiology 2004; 231: 225-30.

Purpose: To evaluate initial experience with radiofrequency (RF) ablation of adrenal neoplasms.

Materials and Methods: Thirteen adrenal masses in 12 patients (bilateral metastases in one patient) were treated with computed tomography (CT)-guided percutaneous RF ablation. Eleven adrenal lesions were metastases (five from lung cancer, four from renal cell carcinoma, and two from melanoma); one lesion was a pheochromocytoma and one was an aldosteronoma. There were 10 men and two women (average age, 58 years; range, 40-77 years) in the study; average adrenal mass diameter was 3.9 cm (range, 1-8 cm). Average number of RF applications per adrenal mass was 2.7 (range, 1-5 applications); average time per application was 7.8 minutes (range, 4-13 minutes). An internally cooled single electrode was used in five sessions; an internally cooled cluster electrode was used in eight sessions.

Results: Average follow-up was 11.2 months (range, 1-46 months). Eleven of 13 lesions were treated successfully with RF ablation after one session. Successful treatment was defined as lack of enhancement of the treated region on follow-up CT images and resolution of the biochemical abnormality in two patients. In two patients with large adrenal lesions (4 and 8 cm in diameter), enhancement of residual tissue was observed after one treatment session; this finding was indicative of residual tumor. One patient with thrombocytopenia that resulted from chemotherapy had a small hematoma, but no transfusion was required. No patient developed hypertension during the RF application. No patient with metastases had recurrent tumor at the treated site, and this lack of recurrence indicated effective local control; 11 patients had progression of metastatic disease at extraadrenal sites.

Conclusion: Preliminary data suggest that CT-guided RF ablation is an effective technique for local control of adrenal neoplasms.

Editorial Comment

Radiofrequency (RF) thermal ablation is a minimally invasive technique for treating inoperable solid tumors. This technique has been mainly used to treat solid hepatic and renal tumors and bone lesions (particularly osteoid osteoma). More recently, lesions involving lung, breast and the adrenal gland have also been treated by this modality. Percutaneous, image-guided RF ablation is a safe and well-tolerated procedure but may eventually present variable degree of complication (bleeding, infection, tumor seeding, pneumothorax and non-targeted thermal damage).

In this paper the authors present a successful treatment of 11 of thirteen adrenal tumors (average diameter of 3.9 cm) treated with a CT-guided RF ablation. Eleven out 13 adrenal masses were metastases, with 6 isolated to the adrenal gland and 5 associated with localized disease elsewhere that had been successfully controlled with chemotherapy, radiation therapy, and/or surgical resection. Criteria for successful treatment were based on the absence of residual CT-contrast enhancement of soft tissues component, no evidence of subsequent adrenal enlargement or recurrent biochemical activity. Six of the ten patients with an extraadrenal primary tumor subsequently died of metastatic disease to other sites. The average time of death was 8 months after the adrenal tumor treatment (range 3 - 16 months). The four remaining patients of the 10 with extraadrenal primary tumor had new metastatic disease in extraadrenal sites. This manuscript offers a promising technique with important results since no patient with metastases (11 patients) had recurrent tumor at the treated site, and this lack of recurrence indicated effective local control.

Although consensus indication of percutaneous RF ablation in oncology is not strictly defined, one should keep in mind that the use of these techniques for local cancer treatment should consider that a local disease control may or may not improve patients' survival. Long term follow-up and randomized prospective trials are required to evaluate survival impact, document long-term efficacy and to determine if percutaneous RF ablation can reduce the number or eliminate repeated surgical intervention in specific clinic scenarios.

Dr. Adilson Prando
Department of Radiology
Vera Cruz Hospital
Campinas, São Paulo, Brazil

Arteriioureteral fistulas: a clinical, diagnostic, and therapeutic dilemma

Madoff DC, Gupta S, Toombs BD, Skolkin MD, Charnsangavej C, Morello FA Jr, Ahrar K, Hicks ME
Division of Diagnostic Imaging, The University of Texas M D Anderson Cancer Center, Houston, Texas, USA

AJR Am J Roentgenol. 2004; 182: 1241-50

Review article: no abstract available

Editorial Comment

Arteriioureteral fistula is a rare entity and a potentially life-threatening cause of hematuria with a 23% mortality rate. Although rare, it is being diagnosed more frequently because of the increase of predisposing factors such as radiation therapy and major surgery in the pelvis, presence of previous vascular surgery and presence of double-J-stent (1,2). These patients usually present intermittent episodes of gross hematuria. Arteriioureteral fis-

tula represents abnormal communications between a major artery and the mid or distal portion of the ureter. Frequently the fistula occurs between the external iliac artery and the ureter. This entity is a diagnostic challenge for the radiologist given the intermittent nature of the bleeding. Thus, various techniques have been used in attempt for its diagnosis: cystoscopy , intravenous urography, ureterography, abdominal and pelvic CT, renal arteriography, and selective iliac arteriography. Selective iliac arteriography although presents low sensitivity (less than 50%), is considered the most sensitive technique. The cause of false negative examination is due to the fact of examining the patient when the fistula is partially occluded by a thrombus(quiescent phase). True positive findings are arterial pseudoaneurysms at the point where the ureter crosses the iliac artery and gross extravasation of contrast material into the ureter. Classic treatment of this entity is based on open surgery, which is usually unsuccessful and frequently associated with increased morbidity and mortality. In patients explored surgically without a preoperative diagnosis, the mortality rate is 64% in comparison to 8%, when the correct diagnosis is made pre-operatively.

Option treatments are quite variable: nephrectomy or nephroureterectomy, ureteral reconstruction, ureterostomy (surgical or percutaneous) or pyelonephrostomy, ligation of the ureter, embolization of the renal artery, renal irradiation, and autotransplantation. Recently a sonographically guided percutaneous nephrostomy followed by antegrade insertion of multiple metallic coils into the ureteral lumen just proximal to the fistula was reported. Vascular surgical procedures includes local reconstruction (i.e., arteriorrhaphy, patch closure, interposition graft, bypass), ligation with or without extra anatomic bypass (if arterioureteral fistulas arise from either common or external iliac artery), and ligation of the internal iliac artery.

Recently successful endovascular treatment of arterioureteral fistula using graft covered stent have been described and it seems to be a promising alternative to surgical procedures because presents less morbidity and mortality. Long-term follow-up after this endovascular treatment technique is needed.

References

1. Marco Perez LM, Vigues Julia F, Trilla Herrera E, Dominguez Elias J, Ponce Campuzano A, Gonzalez Satue C, et al.: Hematuria secondary to arterioureteral fistula. Endovascular treatment. Actas Urol Esp. 2001; 25: 668-671.
2. Sherif A, Karacagil S, Magnusson A, Nyman R, Norlen BJ, Bergqvist D: Endovascular approach to treating secondary arterioureteral fistula, Scand J Urol Nephrol. 2002; 36: 80-82.

Dr. Adilson Prando
Department of Radiology
Vera Cruz Hospital
Campinas, São Paulo, Brazil

UROGENITAL TRAUMA

Management of bulbous urethral disruption by blunt external trauma: the sooner, the better?

Ku JH, Kim ME, Jeon YS, Lee NK, Park YH.
Department of Urology, Military Manpower Administration, Seoul, South Korea.
Urology 2002; 60: 579-83.

Objectives: To investigate whether the incidence of urethral stricture is different according to the primary mode of management, we retrospectively reviewed the record of patients with bulbous urethral disruption by external blunt trauma.

Methods: A total of 95 patients with blunt bulbous urethral injuries were included in the study. Sixty-five underwent immediate urethral realignment and 30 underwent initial suprapubic tube placement followed

by delayed management. The urethral injuries were interpreted as partial or complete disruption on the basis of the retrograde urethrographic findings.

Results: Urethral stricture developed in 12 patients (18.5%) who underwent immediate management and in 12 patients (40.0%) who underwent delayed management (P = 0.025). Of the patients with partial disruption, no significant difference was found in the urethral stricture incidence between the two groups. However, of the patients with complete disruption, urethral stricture developed in 10 (31.3%) of 32 patients who underwent immediate management and 11 (68.8%) of 16 patients who underwent delayed management (P = 0.014). In addition, the degree of urethral stricture in the patients who underwent delayed management was more severe than in those who underwent immediate urethral realignment (P = 0.023).

Conclusions: Our findings suggest that better outcomes can be obtained when immediate urethral realignment is successful in patients with bulbous urethral disruption. Additional research, including prospective randomized trials, is needed to confirm these findings.

Editorial Comment

This is only one of many studies that shows that early endoscopic realignment of blunt posterior urethral injuries is a good idea. In this series, the rate of stricture formation was halved in those who were realigned. Other series show similar benefit.

Techniques: Many techniques have been described. I first attempt to place a flexible cystoscope in the bladder - this is successful in a small but notable percentage. Next I dilate the suprapubic tract with flexible urethral dilators, place the flexible cystoscope into the bladder over a wire, and attempt anterograde passage of the scope. Placement of the guidewire down through the proximal urethral stump is often successful, and a Council catheter can then be “railroaded” into the bladder from below. If this fails, I have a second surgeon perform rigid urethroscopy from below, turn off the light on the anterograde scope, and attempt to advance the flexible scope from above towards the light. If this fails, I stop and try again another day.

Timing: Timing of attempted realignment can be difficult. Unstable or very ill patients may need to be temporized with a suprapubic tube, and brought to the operating room only when more stable, or undergoing other procedures. Some series show that even delayed realignment up to 20 days after injury is helpful. If the first attempt at realignment fails, I suggest bringing the patient back 2 or 3 days later and trying again. I limit my attempts to about 45 minutes, reasoning that continued attempts might be harmful, although no data exists to prove this.

Complications vs Benefits: Some practitioners worry that endoscopic realignment might have some sort of unexpected complication, such as infection of the hematoma, or pelvic damage from the use of irrigation during cystoscopy. This has not ever been reported, and certainly these theoretical complications are outweighed by the real benefits from the procedure. Benefits include the possibility that the urethra will heal, even when completely disrupted, without the need for secondary delayed urethroplasty. When urethroplasty is required, it is clear that the procedure is much easier after endoscopic realignment because the scar defect between the normal urethral ends is shorter and the ends are often in reasonable apposition.

Do not attempt early open realignment: We must always emphasize that the data shows that immediate open realignment is not a good idea. It increases the incontinence rate, the impotence rate, and can be associated with life threatening bleeding when the pelvic hematoma is entered. Even in cases of rectal injury, where laparotomy, rectal closure and colostomy may be required, placement of a urethral catheter across the defect without primary suturing may be most prudent.

Dr. Richard A. Santucci
Assistant Professor of Urology
Wayne State University
Detroit, Michigan, USA

Renal injury and operative management in the United States: results of a population-based study.

Wessells H, Suh D, Porter JR, Rivara F, MacKenzie EJ, Jurkovich GJ, Nathens AB.
Department of Urology, Harborview Medical Center and University of Washington
Medical School, Seattle, 98104, USA

J Trauma. 2003; 54:423-30

Background: To evaluate the extent to which nonoperative renal trauma management has been adopted, we determined the incidence of renal injury and the rate of operative management across the United States.

Methods: International Classification of Diseases, Ninth Revision diagnosis and procedure codes identified patients with renal injuries in an 18-state administrative database representing 62% of the U.S. population.

Results: Of 523,870 patients hospitalized for trauma in 1997 or 1998, 6,231 (1.2%) had renal injuries (4.89 per 100,000 population). Sixty-four percent of patients with injuries that were classified had contusions/hematomas, 26.3% had lacerations, 5.3% had parenchymal disruption, and 4% had vascular injuries. Eleven percent of renal trauma patients required surgical management of their kidney injuries, of whom 61%, or 7% of patients with renal injuries overall, underwent nephrectomy. Injury Severity Score, mechanism, and renal injury severity were independent predictors of nephrectomy.

Conclusion: The nephrectomy rate in community and academic centers reflects renal and global injury severity. Prospective trials are indicated to determine whether, in the traumatized patient with severe kidney injury, renal preservation could lead to improved outcomes compared with nephrectomy.

Editorial Comment

The most quoted statistic is that 10% of all serious injuries involve the kidney. However, in this review of half a million American trauma patients, the real incidence was closer to 1%. Subset analysis showed different renal injury rates depending on the cause of trauma: firearms 3.5%, motor vehicle accidents 2.2%, bicycle accidents 1.9%, pedestrian accidents 1.5%, stab wound 0.8% and falls 0.5%. Most injuries were renal contusions (64%) although 26% had lacerations, 5% had parenchymal disruption and 4% had vascular injuries. 13% of lacerations were treated with renorrhaphy, and 10% with nephrectomy, while 25% of vascular injuries required nephrectomy.

Patients with vascular injuries, when operated on, had an 84% nephrectomy rate - which seems understandable in light of the potential for exsanguination or renal nonfunction after these injuries. Of those being operated on for lacerations, the nephrectomy rate as an appallingly high 64%.

There are lessons from this huge series:

1) Renal injury rates are lower than we thought
2) Vascular injuries, when operated on, usually result in nephrectomy
3) Renal lacerations (too) frequently result in nephrectomy when operated on. Because of this, I believe that expectant management is the preferred approach, as surely some of these 64% lost kidney might be saved either by more judicious use of renorrhaphy or by avoiding retroperitoneal exploration altogether.

Dr. Richard A. Santucci
Assistant Professor of Urology
Wayne State University
Detroit, Michigan, USA

PATHOLOGY

A clinicopathologic comparison of clinical stages T1c versus T2 prostate adenocarcinoma: lack of differences in PSA recurrence

Armatys S, Koch MO, Bihrle R, Gardner TA, Eble JN, Patel NB, Daggy JB, Cheng L
Indiana University School of Medicine, Indianapolis, Indiana, USA
Mod Pathol. 2004; 17 (suppl.1): 138A

Background: The current staging system places men with tumors detected because of elevated prostate-specific antigen in the T1 group and those with palpable localized prostate cancer in T2. To test the hypothesis that these patients have similar outcomes and other clinicopathologic features and should be grouped together, we studied a series of 291 patients with cT1c and cT2 prostate cancers.

Design: From a series of 288 consecutive patients who underwent radical retropubic prostatectomy, we studied those with cT1c (n = 223) and cT2 (n = 65) adenocarcinoma. All specimens were totally embedded and whole-mounted. Tumor volume was measured using the grid method. Clinical and pathologic characteristics were analyzed.

Results: Patients with cT2 tumors were more likely to have a higher Gleason score (P = 0.04) and final pathologic stage (P = 0.05), compared to those with T1c tumors. There was no significant difference in age (P = 0.92), preoperative PSA (P = 0.17), prostate weight (P = 0.34), tumor volume (P = 0.16), the largest tumor size (P = 0.12), surgical margin status (P = 0.86) or the presence of perineural invasion (P = 0.09) between patients with clinical stage T1c tumors and those with cT2 tumors. No difference in PSA recurrence was observed between patients with clinical stage T1c tumors and those with cT2 tumors (P = 0.20).

Conclusions: Patients with clinical stage T2 tumors have higher Gleason score and final pathologic stage compared to those tumors detected because of elevated serum PSA (T1c). However, the PSA recurrence rate for T1c tumors is similar to cT2 tumors, indicating a need for further refinement of clinical staging system.

Editorial Comment

Tumor found in one or both lobes by needle biopsy, but not palpable or visible by imaging, is classified as T1c. This is a clinical category in the TNM system corresponding to several pathologic findings in the specimen of radical prostatectomy. The study showed that clinical stage T2 tumors have higher Gleason score and final pathologic stage compared to those tumors detected because of elevated serum PSA (T1c), however and most importantly, the PSA recurrence rate for T1c tumors is similar to clinical T2 tumors. The TNM system stratifies prostate carcinoma according to prognosis as evaluated by biochemical recurrence and/or metastases. Based on their findings the authors suggest a further refinement of clinical staging system probably including T1c in the T2 category.

Recently we classified in our Institution 51 stage T1c patients and 104 clinical T2 patients according to the pathologic findings of the radical prostatectomy specimen. The findings were classified as corresponding to minimal, moderate or advanced tumor according to the study published by Epstein et al. (JAMA. 1994; 271: 368-374). The distribution for stage T1c was 19.69%, 60.78% and 19.69% surgical specimens in the categories limited tumor, moderate tumor and advanced tumor respectively; and, for clinical stage T2, 9.61%, 62.5% and 27.9% respectively for the same categories. The statistical analysis did not show significant difference between these two stages (p = 0.165). Our findings also favor a further refinement of clinical staging system.

Dr. Athanase Billis
Full-Professor of Pathology
State University of Campinas, Unicamp
Campinas, São Paulo, Brazil

Does pT2b cancer exist? Critical appraisal of the 2002 Tumor-Nodes-Metastasis (TNM) classification of prostate cancer

Eichelberger LE, Cheng L
Indiana University School of Medicine, Indianapolis, Indiana, USA
Mod Pathol. 2004; 17 (suppl. 1): 148A

Background: Clinical and pathologic staging of prostate adenocarcinoma provides a method for assessing the extent of tumor and predicting patient prognosis. The American Joint Committee on Cancer (AJCC) TNM staging system has undergone recent revisions for stage T2 prostate tumors. T2 tumors are now subclassified asT2a (less than one half of one lobe involvement), T2b (more than one half of one lobe involvement), and T2c (bilateral involvement). Despite general acceptance of the system as a whole, controversy and uncertainty still exist in the application of the TNM staging system, particularly with use of the T2 staging subclassification. We analyzed the 2002 AJCC subclassification for stage T2 prostate cancers in a large series of radical retropubic prostatectomies.

Design: The study population consisted of 369 prostate cancer patients treated by radical retropubic prostatectomy. None were treated by hormonal or radiation therapy prior to surgery. Radical prostatectomies were histologically evaluated by complete embedding and whole mount processing. Tumors were initially staged using the 1997 AJCC TNM system, and then reevaluated according to 2002 TNM staging guidelines.

Results: The prostate weight ranged from 14 to 149 grams (median, 38 grams). Prostate cancers were multifocal in 312 cases (85%). The majority of the specimens were pathologic stage T2 (276, 75%). Using the 2002 TNM staging criteria, 54 (15%) of the tumors were stage pT2a, 222 (60%) were pT2c, 75 were (20%) pT3a, and 18 (5%) were pT3b. No pathologic stage T2b tumors were identified.

Conclusions: Taking into consideration the average prostate weight (35 grams) as well as the predominance of tumor multifocality, it would be unusual to identify tumor involving more than one half of one lobe (approximately 8 cc), without involving the other lobe. We question the existence of a true pT2b tumor.

Editorial Comment

This is a very interesting study based on pathologic findings in the specimen of radical prostatectomies questioning the existence of pT2b tumors. None of a total of 369 cancers was stage pT2b. No case involved more than half of one lobe when cancer is unilateral.

We were very curious about and checked this finding in 198 radical prostatectomies performed in our Institution. From the total of 198 specimens, cancer was bilateral in 174 (87.87%) and unilateral in 24 (12.12%). We use for tumor extent evaluation a point-count method published by us in International Braz J Urol. 2003; 29:113-120. In all of the 24 specimens with unilateral cancer, extension corresponded to less than half of the lobe. Our findings also question the existence of a true pT2b tumor.

Dr. Athanase Billis
Full-Professor of Pathology
State University of Campinas, Unicamp
Campinas, São Paulo, Brazil

INVESTIGATIVE UROLOGY

Enhanced renal cryoablation with hilar clamping and intrarenal cooling in a porcine model

William Collyer, Ramakrishna Venkatesh, Richard Vanlangendonck, Kevin Morissey, Peter Humphrey, Yan Yan, Jaime Landman

Division of Urology and Department of Pathology, Washington University School of Medicine, St. Louis, Missouri, USA

Urology 2004; 63: 1209-1212.

Objectives: To evaluate the effects of renal vascular control and intrarenal cooling on the size of renal lesions attainable with a 3.4-mm cryoprobe.

Methods: Three groups of pigs underwent unilateral laparoscopic renal cryoablation with a 3.4-mm cryoprobe inserted to a depth of 1 cm. An 8-minute double-freeze cycle was used. One week later, an acute contralateral cryolesion was created before killing the animal. In group 1 (n = 6), bilateral cryolesions were created without hilar clamping or intrarenal cooling. In group 2 (n = 6), the cryolesions were created after hilar clamping alone. In group 3 (n = 6), the cryolesions were created after both hilar clamping and application of intrarenal cooling with saline ice-slush infused into the renal pelvis. After nephrectomy, the gross diameters were determined for each cryolesion. The mean diameters of the zones of complete and partial necrosis were determined by histopathologic examination.

Results: In group 3, the cortex cooled from 36.9°C to a mean of 24.8°C. Acutely, no statistically significant difference was found between the lesions produced with clamping alone (37.6 mm) and intrarenal cooling (40.4 mm); however, both were significantly larger than the control cryolesions (28.7 mm). At 1 week, the area of complete necrosis produced with intrarenal cooling (34.3 mm) was significantly larger than the areas of necrosis produced by clamping alone (27.8 mm) or conventional cryoablation (23.9 mm; ALPHA = 0.05, Tukey's honestly significantly different [HSD] test).

Conclusions: Enhanced cryolesion necrosis was achieved with intrarenal cooling with a 3.4-mm cryoprobe. Intrarenal cooling may be a valuable adjunct to cryoablation in selected cases.

Editorial Comment

The authors evaluated the ability of intrarenal cooling (retrograde intracavitary ice-cold saline perfusion) and hilar clamping to increase the area of renal necrosis attainable with a single cryoprobe.

The authors noted a significantly increased gross cryolesion diameter with occlusion of both renal artery and vein. Additionally, it was observed that the mean diameter of complete central necrosis was 4 mm larger with hilar occlusion alone than it was with conventional cryoablation. Intrarenal cooling with hilar clamping produced necrotic cryolesions that were an average of 10 mm larger than standard cryolesions and 6 mm larger than cryolesions with hilar occlusion alone.

Dr. Francisco J.B. Sampaio
Full-Professor and Chair, Urogenital Research Unit
State University of Rio de Janeiro
Rio de Janeiro, Brazil

Improvement in relaxation response in corpus cavernosum from trained rats

Claudino MA, Priviero FBM, Teixeira CE, de Nucci G, Antunes E, Zanesco A
Department of Pharmacology, Faculty of Medical Sciences, UNICAMP, Campinas, São Paulo, and Department of Physical Education, Biosciences Institute, UNESP, Rio Claro, São Paulo, Brazil

Urology 2004; 63: 1004-1008.

Objectives: To evaluate the contractile and relaxing responses in rat corpus cavernosum (RCC) from rats after 8 weeks of run training, because erectile function is highly dependent on nitric oxide (NO) from nitrergic fibers or endothelium. Physical activity enhances NO production and improves endothelial function, with beneficial effects on cardiovascular disease.

Methods: The training program consisted of 8 weeks of run training, 5 days/wk, and each session lasted 60 minutes. The RCC was isolated, and concentration-response curves to NO, acetylcholine, sodium nitroprusside, phenylephrine, and endothelin were obtained. The excitatory and inhibitory effects of electrical field stimulation (2 to 32 Hz) were also evaluated.

Results: NO (0.1 to 100 μM) and sodium nitroprusside (0.01 to 1000 μM) produced a relaxing effect in RCC in a dose-dependent manner, with the maximal responses to NO (control 62% ± 4%, trained 88% ± 3%) and sodium nitroprusside (control 83% ± 3%, trained 95% ± 2%) significantly enhanced after 8 weeks of run training. However, acetylcholine-induced relaxations were not affected by exercise. Similarly, electrical field stimulation-induced relaxations were significantly increased in RCC from trained rats at 2 Hz (control 2.4% ± 0.3%, trained 4.2% ± 0.5%) and 4 Hz (control 5.3% ± 1.2%, trained 12.5% ± 1.7%). The contractile sensitivity of RCC to phenylephrine (0.01 to 100 μM) and endothelin (0.01 to 100 nM) was not modified by training exercise.

Conclusions: Our findings suggest that run training enhances functional responses in rat RCC that involves increases in the NO-cyclic guanosine monophosphate signaling pathway by endothelium-independent mechanisms that is not accompanied by changes in contractile sensitivity.

Editorial Comment

Previous studies have associated the beneficial effect of regular physical activity on cardiovascular diseases, with improvement in endothelium-derived relaxing factor production, reduction of sympathetic drive, and increases in parasympathetic activity to the peripheral tissues.

The authors perform the present experience aiming to evaluate the functional responses to both vasodilating agents (sodium nitroprusside [SNP], acetylcholine [ACh], NO) and vasoconstricting agents (phenylephrine [PE] and endothelin-1 [ET-1]) in rat corpus cavernosum (RCC) after 8 weeks of treadmill training.

The authors demonstrated objectively by the first time that physical training has beneficial effects on functional responses of RCC, because the run training program for 8 weeks increased the relaxation response to NO, SNP, and EFS.

Dr. Francisco J.B. Sampaio
Full-Professor and Chair, Urogenital Research Unit
State University of Rio de Janeiro
Rio de Janeiro, Brazil

RECONSTRUCTIVE UROLOGY

Neuroanatomy of the male urethra and perineum

Yucel S, Baskin LS
Department of Urology and Paediatrics, UCSF Children's Medical Center, University of California San Francisco, San Francisco, California, USA
BJU Int. 2003; 92: 624-30

Objective: To describe the topography of the perineal nerves from their pudendal origin to their course into the male genitalia, with specific attention on the course of the perineal nerve along the ventral penis, including branches into bulbospongiosus muscle and corpus spongiosum.

Materials and Methods: The study comprised 18 normal human fetal penile specimens at 17.5 - 38 weeks of gestation (determined by fetal heel-to-toe length). Specimens were fixed in formalin, embedded in paraffin wax and serially sectioned at 6 micro m. The penile specimens contained the whole penis from the glans to the crural bodies, beneath the pubic arch and the perineum up to the anal verge. Immunocytochemistry was assessed on selected sections with antibodies against the neuronal markers S-100 and nitric oxide synthase (nNOS). Three-dimensional computer reconstruction of serial sections allowed an in-depth analysis of the neuroanatomy of the fetal penis, perineum and surrounding structures.

Results: After the pudendal nerve leaves the pudendal canal it gives rise to the perineal nerve branches in the ischiorectal fossa. Perineal nerves travel alongside the ischiocavernous and bulbospongiosus muscles and before reaching the latter, nerve branches course into the bulbospongiosus muscle. During its pathway within this muscle, fine nerve fibres course into the corpus spongiosum by piercing through the junction of the muscle. At the penoscrotal area, the perineal nerves give branches to the scrotum, funnelling into the interscrotal septum. Perineal nerves continue their pathway over the ventral side of penis covering the ventral surface of corpus spongiosum. Branches of the dorsal nerve of the penis at the junction of corpus cavernosum and corpus spongiosum assemble into a network with the perineal nerves. All perineal nerves from their main trunk at the ischiorectal fossa until their interaction with dorsal nerve of penis at the base of penis were nNOS negative. After the interaction with the dorsal nerve of penis, they become nNOS positive.

Conclusion: Integrating neuroanatomical knowledge about the perineal nerves and their communication with the dorsal nerve of penis should facilitate a strategic approach to reconstructive procedures on the penis. Special care should be taken at the junction between the corpora cavernosa and spongiosa, where the dorsal nerve joins the perineal nerve, and at the proximal bulbospongiosus muscle, thereby protecting the fine nerves piercing into the cavernosa spongiosa.

Editorial Comment

The authors in this paper describe nicely the topography of the pudendal branches supplying the external male genitalia. Although the anatomy of the pudendal nerves have been the subject of reports for almost 2 centuries newly developed surgical techniques and diagnostic procedures as well as findings regarding the pathophysiology of diseases of the external male genitalia and external sphincter have led to new studies looking at the topography of nerve ramifications such as the pudendal nerve and its interaction with the vegetative neural system. Recent papers have specifically looked at the role of pudendal nerve branches both in the male and female external sphincter (1,2). In this manuscript the authors nicely outlined how the perineal branches of the pudendal nerve travel alongside the musculus ischiocavernosus and bulbospongiosus before penetrating the corpus spongiosum. There is also an apparent strong communication between the perineal pudendal nerve branches and the dorsal nerve of the penis at the junction of the corpus cavernosum and the corpus spongiosum.

These findings are not only important for elucidation of penile diseases or application of local anaesthesia in case of penile surgery, it may also be relevant for the discussion whether afferent sensory nerves from the membranous urethra and the proximal bulbous urethra go alongside the same pathways. According to recent literature (3) sensory afferent nerves from these urethral segments are probably mainly responsible for prevention of the "first drop" incontinence after radical prostatectomy or cystectomy.

References

1. Colleselli K, Stenzl A, Eder R, Strasser H, Poisel S, Bartsch G: The female urethral sphincter: a morphological and topographical study. J Urol. 1998; 160: 49-54.
2. Strasser H, Ninkovic M, Hess M, Bartsch G, Stenzl A: Anatomic and functional studies of the male and female urethral sphincter. World J Urol. 2000; 18: 324-9.
3. Turner WH, Danuser H, Moehrle K, Studer UE: The effect of nerve sparing cystectomy technique on postoperative continence after orthotopic bladder substitution. J Urol. 1997; 158: 2118-22.

Dr. Arnulf Stenzl
Professor and Chairman of Urology
Eberhard-Karls-University Tuebingen
Tuebingen, Germany

Urinary tract biomaterials

Beiko DT, Knudsen BE, Watterson JD, Cadieux PA, Reid G, Denstedt JD
Department of Urology, Queen's University, Kingston, University of Western Ontario, London, Ontario, Canada

J Urol. 2004; 171: 2438-2444

Purpose: As a result of endourological advances, biomaterials have become increasingly used within the urinary tract. This review article provides an update on the current status of urinary tract biomaterials, discussing issues of biocompatibility, biomaterials available for use, clinical applications and biomaterial related complications. Perspectives on future materials for use in the urinary tract are also provided.

Materials and Methods: We performed a comprehensive search of the peer reviewed literature on all aspects of biomaterials in the urinary tract using PubMed and MEDLINE. All pertinent articles were reviewed in detail.

Results: Any potential biomaterial must undergo rigorous physical and biocompatibility testing prior to its commercialization and use in humans. There are currently many different bulk materials and coatings available for the manufacturing of biomaterials, although the ideal material has yet to be discovered. For use in the urinary tract, biomaterials may be formed into devices, including ureteral and urethral stents, urethral catheters and percutaneous nephrostomy tubes. Despite significant advances in basic science research involving biocompatibility issues and biofilm formation, infection and encrustation remain associated with the use of biomaterials in the urinary tract and, therefore, limit their long-term indwelling time.

Conclusions: Prosthetic devices formed from biomaterials will continue to be an essential tool in the practicing urologist's armamentarium. Ongoing research is essential to optimize biocompatibility and decrease biomaterial related complications such as infection and encrustation within the urinary tract. Future advances include biodegradables, novel coatings and tissue engineering.

Editorial Comment

This is a nice overview of the increasing number of biomaterials which can be used for and around the urinary tract. However, ongoing research is an absolute must because biocompatibility, interactions with body tissues and subsequent scaring are far from ideal with the current materials.

Dr. Arnulf Stenzl
Professor and Chairman of Urology
Eberhard-Karls-University Tuebingen
Tuebingen, Germany

UROLOGICAL ONCOLOGY

Tumor seeding in urological laparoscopy: an international survey

Micali S, Celia A, Bove P, De Stefani S, Sighinolfi MC, Kavoussi LR, Bianchi G
Department of Urology, University of Modena e Reggio Emilia, Modena, Italy
J Urol. 2004; 171: 2151-4

Purpose: During the last 10 years laparoscopy has been applied to treat most urological pathology including malignancies. There has been concern regarding peritoneal dissemination and port site metastases. We undertook a survey to assess the incidence of this occurrence.

Materials and Methods: A total of 50 international urology departments with experts in laparoscopic urological surgery were contacted for this study. Each site was asked to complete a 2-page survey regarding the volume of laparoscopic urological procedures and port site recurrences.

Results: Nineteen sites elected to participate. A total of 18750 laparoscopic procedures were performed, of which 10912 were for cancer. These included 2604 radical nephrectomies, 559 nephroureterectomies, 555 partial nephrectomies, 27 segmental ureterectomies, 3665 radical prostatectomies, 1869 pelvic lymph node dissections, 479 retroperitoneal lymph node dissections, 336 adrenalectomies and 108 procedures listed as other. Tumor seeding was reported in 13 cases (0.1%), including 3 nephroureterectomies for transitional cell carcinoma, 4 nephrectomies (incidental transitional cell carcinoma), 4 adrenalectomies for metastases, 1 retroperitoneal lymph node dissection for testicular cancer and 1 pelvic lymph node dissection for cancer of the penis. Port seeding occurred in 10 cases (0.09%) and peritoneal spread in 3 cases (0.03%).

Conclusions: The incidence of tumor seeding after laparoscopic oncological surgery is rare and does not appear greater than what has been historically reported for open surgery. Tumor seeding seems to be most commonly related to the removal of high grade tumors and deviation from oncological surgical principles.

Editorial Comment

Laparoscopic surgery has evolved to a reliable and safe procedure in urology – if indicated correctly. This paper shows the safety of the procedure in regard to oncological procedures.

Two facts however deserve emphasis and should be kept in mind. First, patients with port metastases might not return to the surgeon or the center where the initial procedure was undertaken, so a certain number of non-reporting is certain. Second, the majority of implantation metastases (n = 7) stems from transitional cancer. This tumor entity therefore might be considered hazardous for laparoscopic procedures and open surgery might be preferable here.

Dr. Andreas Böhle
Professor of Urology
HELIOS Agnes Karll Hospital
Bad Schwartau, Germany

Extended radical lymphadenectomy in patients with urothelial bladder cancer: results of a prospective multicenter study

Leissner J, Ghoneim MA, Abol-Enein H, Thuroff JW, Franzaring L, Fisch M, Schulze H, Managadze G, Allhoff EP, el-Baz MA, Kastendieck H, Buhtz P, Kropf S, Hohenfellner R, Wolf HK
Department of Urology, Otto-von-Guericke-University, Magdeburg, Germany
J Urol. 2004; 171: 139-44

Purpose: Previous studies demonstrate a positive correlation between postoperative survival and the extent of pelvic lymphadenectomies in patients with bladder cancer. However, the distribution of nodal metastases has not been examined in sufficient detail. Therefore, we conducted a comprehensive prospective analysis of lymph node metastases to obtain precise knowledge about the pattern of lymphatic tumor spread.

Materials and Methods: Between 1999 and 2002 we performed 290 radical cystectomies and extended lymphadenectomies. Cranial border of the lymphadenectomy was the level of the inferior mesenteric artery, lateral border was the genitofemoral nerve and caudal border was the pelvic floor. We made every effort to excise and examine microscopically all lymph nodes from 12 well-defined anatomical locations.

Results: Mean total number and standard deviation of lymph nodes removed was 43.1 +/- 16.1. Nodal metastases were present in 27.9% of patients. The percentage of metastases at different sites ranged from 14.1% (right obturator nodes) to 2.9% (right paracaval nodes above the aortic bifurcation). By studying cases of unilateral primary tumors or with only 1 metastasis we observed a preferred pattern of metastatic spread. However, there were many exceptions to the rule and we did not identify a well-defined sentinel lymph node.

Conclusions: We strongly recommend extended radical lymphadenectomy to all patients undergoing radical cystectomy for bladder cancer to remove all metastatic tumor deposits completely. The operation can be conducted in routine clinical practice and our data may serve as a guideline for future standardization and quality control of the procedure.

Editorial Comment

These authors performed a meticulous lymphadenectomy together with cystectomy in patients with bladder cancer. In analogy to previous approaches in retroperitoneal lymphadenectomy for testis cancer, the lymph nodes were sampled and ordered according to there anatomic origin.

In general, these data provide interesting information on the rate and the extent of lymph nodular metastases in bladder cancer. Several issues however deserve comments. First, patients with pT1 category (n = 57) only had 1.8 % metastases, whereas pT2a patients had 10.7% and pT2b had 22.2% metastases. All other pT – categories had around 40%, whereas pT4b had 80 % metastases. The percentage of lymph node metastases on all 290 patients was around 3 – 8 % over all anatomical sides, with the exception of the ipsilateral and contralateral paravesical area (14% and 11%). If patients had nodal metastases at level 1 (next to the bladder) 57% of patients of group were also positive at level 2 and 31 % at level 3.

In conclusion nodal metastases next to the bladder indicate systemic disease. To my opinion, this date would rather provide the rationale for systemic chemotherapy in nodular positive patients.

Dr. Andreas Böhle
Professor of Urology
HELIOS Agnes Karll Hospital
Bad Schwartau, Germany

FEMALE UROLOGY

Urodynamically defined stress urinary incontinence and bladder outlet obstruction coexist in women

Bradley CS, Rovner ES
Department of Obstetrics and Gynecology, University of Iowa Hospitals and Clinics, Iowa City, USA
J Urol. 2004; 171 (2 Pt 1): 757-60

Purpose: The definition and significance of female bladder outlet obstruction (BOO) are poorly understood. We identified patients with urodynamic evidence of BOO in a cohort of women with stress urinary incontinence (SUI).

Materials and Methods: Women with SUI were identified from a videourodynamic data base and pressure flow studies were reexamined. Subjects were excluded if detrusor pressures could not be measured. BOO was diagnosed if the maximum flow rate was less than 12 ml per second and detrusor pressure at maximum flow was greater than 20 cm water or maximum detrusor pressure was greater than 20 cm water in those without measurable flow. Clinical and urodynamic characteristics were compared in the obstructed and unobstructed groups.

Results: Of 104 eligible subjects 19 (18.3%) had BOO. Maximum flow rate, mean flow rate and voided volume were significantly less in the BOO group than in the unobstructed group (8.7 vs. 13.5 ml per second, $p = 0.004$, 5.9 vs. 7.9 ml per second, $p = 0.001$ and 180 vs. 272 ml, $p = 0.008$). Detrusor pressure at maximum flow, maximum detrusor pressure and post-void residual volume were significantly greater in the BOO group than in the unobstructed group (28 vs. 15 cm water, $p < 0.0001$, 31 vs. 19 cm water, $p < 0.0001$ and 71 vs. 10 ml, $p = 0.008$). Etiologies of BOO identified in the 19 subjects included prior anti-incontinence or prolapse surgery in 6, neurological conditions in 4, cystocele in 2, dysfunctional voiding in 3 and idiopathic in 5.

Conclusions: SUI and BOO can coexist even in the absence of common causes of obstruction.

Editorial Comment

The authors of this study reviewed their video urodynamic database and analyzed women with stress urinary incontinence (SUI) to identify evidence of bladder outlet obstruction. It was found that of 104 female patients with urodynamic stress urinary incontinence (defined as involuntary leakage from the urethra during increased abdominal pressure in the absence of a detrusor contraction), 19 (18.3%) had bladder outlet obstruction (BOO). Bladder outlet obstruction was diagnosed if there was a maximum flow rate of < 12 cc/sec and a detrusor pressure at maximum flow of > 20 cm, or if no measurable flow was identified that there was a sustained detrusor contraction during the attempt to void of > 20 cm of water. Potential etiologies of bladder outlet obstruction were identified in 14 of the 19 patients including prior surgery, neurological disorder, cystocele, and dysfunctional voiding. Idiopathic etiology was noted in 5 of the 19 patients.

This paper carries a true intrinsic value through its demonstration that stress urinary incontinence and bladder outlet obstruction may synchronously coexist. Critical points of this study do include the notation that patients were standing during the voiding portion of the urodynamic study as opposed to the standard female micturitional sitting position. The effect of this different position on gender specific voiding is unclear. In addition, the pressure flow analysis was completed with a catheter in the bladder as opposed to a catheter free uroflow. Groutz et al. (1) have previously discussed the potential effect of a transurethral catheter on maximum flow rates in obstructed females. One may postulate that perhaps if the patients in this data base had a catheter free uroflow they would not have qualified as obstructed in this study.

The authors highlight the expanding interest in the identification and analysis of bladder outlet obstruction in women. This will especially have great value for the surgeons who must re-operate on patients who have failed a previous anti-incontinence operation and ponder the need to include a formal urethrolysis at the re-operative setting.

Reference

1. Groutz A, Blaivas JG, Sassone AM: Detrusor pressure uroflowmetry studies in women: effect of a 7Fr transurethral catheter. J Urol. 2000; 164: 109-14.

Dr. Steven P. Petrou
Associate Professor of Urology
Mayo Clinic College of Medicine
Jacksonville, Florida, USA

Nutrient composition of the diet and the development of overactive bladder: a longitudinal study in women

Dallosso HM, McGrother CW, Matthews RJ, Donaldson MM; Leicestershire MRC Incontinence Study Group
Department of Health Sciences, University of Leicester, Leicester, United Kingdom
Neurourol Urodyn. 2004; 23: 204-10

Aims: Evidence for an association between diet and the symptom syndrome overactive bladder (OAB) would be valuable in understanding its aetiology. The present study investigates prospectively the association between the nutrient composition of the diet and the onset of OAB.

Methods: A random sample of community dwelling women aged 40 years or over was studied. Baseline data on urinary symptoms and diet were collected from 6,371 women using a postal questionnaire and food frequency questionnaire. Follow-up data on urinary symptoms were collected from 5,816 of the women in a postal survey 1 year later. Logistic regression was used to investigate the association of diet (daily intakes of energy, macro and micronutrients) with 1 year incidence of OAB.

Results: There was evidence that three nutrients may be associated with OAB onset. Higher intakes of vitamin D ($P = 0.008$), protein ($P = 0.03$), and potassium ($P = 0.05$) were significantly associated with decreased risks of onset. Although overall the associations with vitamin B6 and niacin were not significant ($P = 0.08$ and $P = 0.13$), there was some evidence of a decreased risk of onset with higher intakes.

Conclusions: The results from this prospective study suggest possible aetiological associations between certain nutrients and OAB onset. The findings need confirmation and possible mechanisms to explain these associations need further investigation.

Editorial Comment

This is a very interesting paper, which expands on the earlier work of these authors regarding dietary associations with overactive bladder (OAB). Their past work noted that lower intakes of either vegetables, chicken or breads were independently associated with increased risks of OAB. In this publication, the authors investigated the association between the onset of symptoms of the OAB and routine dietary composition of a specific population with specific regard to both vitamins and macronutrients. The population examined was analyzed using a validated food frequency questionnaire for population in the United Kingdom. Demographic similarity was pursued by relying on census data (those patients who were from South Asian origin were excluded). The data was accumulated through a food frequency postal questionnaire (FFQ) that had been validated for use in a population of the United Kingdom. Statistical analysis was completed to examine the nutrient intakes of patients who had the onset of new OAB cases after 1 year and compare it to those who did not have the symptom complex both at the baseline and follow-up questionnaire. Each nutrient was analyzed with adjustments made for energy intake, age and the presence of stress urinary incontinence. The authors

found that there was a definite possible ideological association between the onset of overactive bladder and nutrient composition of the diet. Specifically, they found that higher intakes of potassium, protein, and vitamin E were significantly associated with a decreased risk of onset of OAB. In addition, vitamin B6, niacin and retinol intake had an association that was approaching but not quite establishing statistical significance.

With the aging population and the increased incidence of overactive bladder, research such as this is extremely valuable for its potentially cost effective prophylaxis against the onset of this malady. The value of vitamin D and its association with exposure to light gives a measure of scientific support to the common feeling that fresh air and sunlight does have the potential to be restorative to good health. Though the questionnaire was validated to a certain population it would be of genuine interest to have similar questionnaire addressed to other populations which show a strong degree of genetic similarity whether it be in Europe, Asia or Africa. With patients continually pressing physicians for a holistic pathway to retain good health and stave off the common maladies associated with aging, this paper makes for valuable reading to give advice on same.

Dr. Steven P. Petrou
Associate Professor of Urology
Mayo Clinic College of Medicine
Jacksonville, Florida, USA

PEDIATRIC UROLOGY

Late renal functional and morphological evaluation after non-operative treatment of high-grade renal injuries in children

El-Sherbiny MT, Aboul-Ghar ME, Hafez AT, Hammad AA, Bazeed MA
The Mansoura Urology and Nephrology Center, Mansoura, Egypt
BJU Int. 2004; 93: 1053-6

Objective: To assess the long-term results in children with high-grade renal trauma who were managed without surgery, as such treatment was initially successful but little is known about the late ipsilateral renal function and morphology.

Patients and Methods: The study included 13 children (nine boys and four girls; mean age 8 years, sd 5) with high-grade renal injury who were managed without surgery between 1997 and 2001, and followed for a mean (sd, range) of 3 (2, 0.5-7) years. The trauma was caused by a motor-car accident in five and falling from a height in eight children, and was on the right in 10 and on the left in three. There was gross and microscopic haematuria in 10 and three patients, respectively. The trauma was graded according to the American Association for Surgery of Trauma, with grades III, IV and V renal injury in six, four and three children, respectively. All patients were treated initially by observation; one required super-selective embolization because of continuing haemorrhage. Three children with progressive urinary extravasation were treated with a percutaneous tube drain and JJ stent for 6 weeks. Patients were discharged after a mean (sd) hospital stay of 9 (6) days. Ultrasonography then showed resolving haematoma in all patients with a mean (sd) size of 7 (2) cm (2). At the last follow-up patients were re-evaluated by a clinical examination, renal scintigraphy and computed tomography angiography.

Results: None of the children was hypertensive nor had any abnormality on urine analysis; all had normal serum creatinine levels, and scintigraphy and angiography showed normal contralateral kidneys in all. Ipsilateral abnormalities were detected in 12 patients, and included a single scar in five, multiple scars in six

and a cystic lesion with multiple septa in one. There was no vascular complication or hydronephrosis, and no significant functional loss, with all affected kidneys having a split function of 41-50% at the last follow-up.

Conclusion: Although there is no late functional loss there are residual morphological changes in almost all children with high-grade renal injury. This study provides objective support for the non-operative management of high-grade renal injury in children, but a prolonged follow-up is warranted to assess the risk of progression of these abnormalities.

Editorial Comment

The authors demonstrate the remarkable results of "non-operative" management of severe renal trauma. Of 6 patients with Grade III, 4 with Grade IV and 3 with Grade V injuries, none required open surgery and despite some morphological abnormalities, none had significant functional loss.

Their data however should be interpreted with some caution however. Seven patients required blood transfusion, one had an arterial embolization and 3 had percutaneous flank drains and internal stent placement. In other words, "non-operative" management has some morbidity and may require procedures. Moreover, this is a select population. No patient in this series had other abdominal injuries, as those patients are managed at a different center. Hence there is a significant selection bias in this series. This leaves unresolved, the question of whether operative intervention may be indicated in patients being operated on for other abdominal injuries. Nonetheless, the authors do demonstrate that impressive results can be obtained in children with major injuries who are managed expectantly.

Dr. Barry A. Kogan
Chief and Professor of Urology and Pediatrics
Albany Medical College
Albany, New York, USA

Desmopressin for the treatment of nocturnal bedwetting in patients with neural tube closure defects

Del Gado R, Aceto G, Del Gaizo D, Del Gado G, Polidori G, Chiozza ML
Paediatrics Department, University of Bari, Bari, Italy
J Urol. 2004; 171: 1656-8

Purpose: We evaluated desmopressin (DDAVP) treatment in patients with neuropathic bladder secondary to neural tube closure defects (NTDs) and nocturnal incontinence.

Materials and Methods: We selected 25 patients, that is 10 males (40%) and 15 females (60%), between ages 7 and 16 years (mean 9.8) with neuropathic bladder secondary to NTDs without a ventricular-peritoneal shunt. All had a low pressure bladder and presented with daytime continence between catheterizations but had persistent nocturnal urine loss 7 nights weekly. They underwent treatment with oral DDAVP according to a certain design, namely an initial dose of 0.2 mg for 3 weeks, which was increased to 0.3 or 0.4 mg for another 3 weeks in non responders. The average dose was 0.2 mg. At the effective minimal dose (bedwetting decrease greater than 50%) patients continued for 6 months and then decreased by intervals of 0.05 mg every 2 weeks. In the event of recurrence treatment continued for 1 year.

Results: All patients responded to treatment during the nighttime hours except 1 who suspended treatment after 4 weeks. There were no adverse effects from DDAVP.

Conclusions: Treating nocturnal bedwetting with DDAVP in patients with NTDs was effective and safe. Nevertheless, to our knowledge treatment duration has not yet been determined.

Editorial Comment

The authors study nocturnal enuresis in a select group of children with neurogenic bladder dysfunction. They note that although bladder management in these patients often makes these patients dry during the day, many are wet at night. In this small study, 24 of 25 patients responded to DDAVP by becoming dry at night. There were no complications.

Although this is a creative approach and likely to lead to quality of life improvement in these patients, there are some concerns. First, the authors acknowledge that this is a selected group of patients. However, they do not give the criteria for selection, except for the exclusion of those with a ventriculoperitoneal shunt. Why were these excluded, since they make up the majority of the population of children with neurogenic bladder dysfunction? Moreover, the authors monitored daily weights and electrolytes in the beginning of the study, but provide no data on the results. How did they counsel the patients regarding drinking? Were they placed on evening fluid restriction? If so, might this negatively affect quality of life? Overall, this is a creative and interesting preliminary study of an interesting problem that warrants further examination.

Dr. Barry A. Kogan
Chief and Professor of Urology and Pediatrics
Albany Medical College
Albany, New York, USA