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UROLOGICAL SURVEY

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STONE DISEASE

Plain radiography still is required in the planning of treatment for urolithiasis

Lamb AD, Wines MD, Mousa S, Tolley DA *The Scottish Lithotriptor Centre, Edinburgh, United Kingdom* J Endourol. 2008; 22: 2201-5

Introduction: Nonenhanced computed tomography (NCT) is recognised as the most sensitive tool in diagnosis of renal tract calculi. However, its role as the sole imaging investigation, for decisions regarding management is less clear.

Objective: To determine the proportion of new stone patient referrals in which management is altered by interpretation of a plain abdominal kidneys, ureters and bladder (KUB) radiograph in addition to NCT.

Methods: One hundred consecutive new referrals to a national lithotripsy centre were considered prospectively for treatment of renal tract calculi.

Results: A significant change in management was undertaken in 17 patients on the basis of KUB findings. Eleven patients had radio-lucent ureteric stones, for which Extracorporeal Shockwave Lithotripsy (ESWL) was consequently not possible and who required endoscopic management. There were six inaccuracies in measurement of size or positioning on NCT. In a further 43 patients it was not possible to confirm management until the KUB was reviewed, although in these cases ESWL or expectant management was still pursued. Thus additional imaging with a KUB was required in order to confirm optimum management in 60 patients.

Conclusion: Additional plain radiography confers a significant advantage in the planning of treatment for urolithiasis once the diagnosis has been established by NCT because of information it provides regarding radioopacity as well as stone size and visibility. This information cannot be delivered by NCT alone. We therefore recommend that KUB imaging is performed on all new stone patients referred for treatment.

Editorial Comment

The study population is a select group - patients referred to a well-established national lithotripsy service in Scotland under well-established protocol and guidelines. The study may therefore underestimate the value of KUB - it is feasible that other patients evaluated at the point of entry (local urologist) may have undergone KUB imaging and a decision was made not to proceed with referral for SWL. In addition, the authors do not report the time interval between CT scan imaging at the local urologist office and subsequent KUB imaging at the tertiary referral center. It is possible that the impact reported for KUB was reflective of movement of the stone over time rather than added clarity from additional imaging.

The authors did not evaluate the utility of Hounsfield units to predict the radiolucent characteristic of the stone - it is possible that could negate the need for plain radiography. The authors did not have a PACS system that allowed them to directly measure stone size on the CT scan, nor did they have access to the full CT scan images - rather they relied on "select hard copies". One would anticipate that the predictive value of CT scan imaging would increase were all the images available for review.

The authors note that renal pelvic and lower pole anatomy is helpful to predict shockwave success, however they do not report how this was interpreted on plain radiography. Coronal reconstructions of the NCCT may have provided useful information in this regard. The authors do not report the number of observers who measured the stones on radiographic imaging, nor do they comment on the inter-observer reliability of such measurements on CT and KUB.

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A comparison of the physical properties of four new generation flexible ureteroscopes: (de)flection, flow properties, torsion stiffness, and optical characteristics

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J Endourol. 2008; 22: 2227-34

Background and Purpose: Several kinds of flexible ureteroscopes are in use for the removal of kidney stones. This study evaluated and compared the characteristics of four new-generation flexible ureteroscopes.

Materials and Methods: The flexible ureteroscopes studied were: the ACMI Dur-8 Elite, the Storz Flex-X2 the Olympus XURF-P5, and the Wolf 7325.076. Measured properties included (de)flection, instrument insertion, flow properties, torsion stiffness, and optical characteristics. Active tip deflection and irrigation flow rates with and without various endoscopic tools were assessed.

Results: All ureteroscopes score better on (de)flection with an empty working channel, compared with a channel when tools are inserted (differences minimum 0.3 degrees--maximum 80.6 degrees). The Olympus XURF-P5 is the only ureteroscope with passive (de)flection capability, whereas the ACMI DUR-8 Elite is the only ureteroscope that has a secondary active (de)flection capability. The Storz Flex-X2 and the Wolf 7325.076 ureteroscopes show nearly identical best deflection capabilities with and without tools inserted in the working channel. The longest (Olympus XURF-P5, 70 cm) and shortest (ACMI DUR-8 Elite, 64 cm) ureteroscopes have, respectively, the lowest and highest flow rates. Best optical quality is offered by the Olympus XURF-P5 and Wolf 7325.076 ureteroscopes, which have low optical distortion (-9.7; -7.7%), high resolving power (17.95; 16.00 line pairs per millimeter), and a large field of view (62.9; 63.2 degrees). The Storz Flex-X2 and Wolf 7325.076 ureteroscopes have lowest torsion stiffness.

Conclusions: The ex vivo evaluation of the deflection capabilities, passage of instruments, flow properties, torsion stiffness, and optical characteristics yielded quantitative measures of the in vivo performance capabilities of four new-generation flexible ureteroscopes. New ureteroscopes should be subjected to this or similar evaluation and comparison. Only in this way can the urologist make an informed and objective decision regarding appropriate instrument choice.

Editorial Comment

In general, this is an elaborate and well-conducted study that offers helpful information in selecting the best flexible ureteroscope for clinical use. However, the study is significantly limited by the lack of statistical analysis. The authors do not report the visual acuity of the 4 observers who subjectively scored the "resolving power" of the ureteroscopes. Though the radius of curvature was qualitatively reported, no quantitative analysis was presented.

The limiting factor in endoscopy is the quality of image. Image is everything! One can conclude based on this study that the Wolf flexible ureteroscope is optimal - low optical distortion, high resolving power and large field of view, with superior illumination compared to the Olympus scope. One limitation of this study is that only one scope was tested from each manufacturer - variance may exist between multiple scopes of the same make and model.

Often image quality deteriorates quickly in the face of bleeding or stone fragmentation - it would be useful to evaluate the ureteroscopes under these conditions.

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ENDOUROLOGY & LAPAROSCOPY

Laparoscopic ureterolysis and omental wrapping

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Objectives: To describe our laparoscopic technique of ureterolysis and omental wrapping using the LigaSure device for the treatment of idiopathic retroperitoneal fibrosis.

Methods: Four bilateral laparoscopic ureterolyses (LUs) and two unilateral LUs were performed in 6 male patients (mean age 47 years). Of the 6 patients, 4 underwent LU without having undergone medical therapy before surgery and 2 underwent LU after medical therapy failure. All had had ureteral stents placed before surgery. The ureters were completely freed from the fibrotic tissue using an Overholt laparoscopic forceps and 10-mm LigaSure atlas. An omental wrap was passed behind the colonic flexure, placed around the ureter, and fixed to the psoas muscle.

Results: The mean operating time was 80 minutes (range 75 and 85) for the unilateral LUs and 200 minutes (range 180-225) for the bilateral procedures. The mean blood loss was 75 mL (range 50 and 100) during LUs and 150 mL (range 80-220) during bilateral LUs. The mean hospital stay was 3.33 days (range 2-5). All indwelling ureteral stents were removed at 4 weeks postoperatively. At a mean follow-up of 37.5 months (range 23-59), all patients were free of symptom and all renal units were unobstructed.

Conclusions: In our experience of LUs and omental wrapping, the reproduction of each step of open surgery seems to offer excellent midterm outcomes. The use of the LigaSure simplified the laparoscopic procedure and made it feasible and safe. We believe that the minimally invasive nature and high effectiveness of LU suggest consideration of this procedure as first-line treatment of idiopathic retroperitoneal fibrosis.

Editorial Comment

The management of retroperitoneal idiopathic fibrosis has evolved from complex open surgery to medical therapy with reasonable success rates and the more conservative management for unfit patients for surgery or patients that did not want to undergo through a long recovery with open surgery may simply have ureteral stents placed and changed them sporadically.

As in our experience, and the authors the Laparoscopic approach appears to be as effective as open surgery but medical therapy may offer a success rate of 50%-80%, with probably a lower effectiveness in patients with severe disease. Longer follow-up is necessary but this is another small series that laparoscopic approach may be as effective as open surgery.

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Artery-only occlusion may provide superior renal preservation during laparoscopic partial nephrectomy

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Objectives: Artery-only occlusion (AO) has been used during nephron-sparing surgery to reduce ischemic damage. However, this has not been demonstrated in laparoscopic partial nephrectomy (LPN). We compared our experience with AO and both artery and vein occlusion (AV) in LPN to optimize the method of ischemia.

Methods: This retrospective case-control study identified 25 patients who underwent AO during LPN and matched them to a cohort of 53 patients who underwent LPN with AV. The groups were compared for ischemia time, blood loss, transfusion rate, and renal function.

Results: The 2 cohorts were comparable on demographic data. Blood loss was similar, with AO and AV demonstrating equivalent transfusion rates. The 2 cohorts had similar warm ischemia times. Positive margin rate was not affected by venous backflow in the AO cohort (0% AO vs 1.9% AV, P = .679). No significant postoperative change in creatinine (Cr) or creatinine clearance (CrCl) was seen for AO; however, a significant change in Cr and CrCl was seen in AV.

Conclusions: AO during LPN does not lead to a greater blood loss or an increased warm ischemia time. The benefit of AO on renal function is significant and requires further investigation.

Editorial Comment

Laparoscopic partial nephrectomy has evolved due to better laparoscopic instruments, high volume surgeons and institutions. Renal warm-Ischemia reperfusion injury remains a very controversial and complex issue without many answers. From optimal ischemia time to ameliorate injury to ideal temperature for renal cooling to preserve renal function are still big question marks. The idea of arterial clamping only allowing venous back flow leakage may cause less visualization and more bleeding but protective mechanism for warm-Ischemia reperfusion injury may be related to the possibility of leakage of adhesion molecules or oxygen radical scavengers that may cause protection but these issues need future investigation.

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IMAGING

Utility of PET/CT in differentiating benign from malignant adrenal nodules in patients with cancer

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AJR Am J Roentgenol. 2008; 191: 1545-51

Objective: The purpose of this retrospective study was to determine the sensitivity and specificity of combined PET/CT in differentiating benign from malignant adrenal nodules measuring at least 1 cm in diameter in patients with cancer.

Materials and Methods: We reviewed the radiology reports and images of patients with known malignant disease who had undergone PET/CT for cancer staging or surveillance and who had adrenal nodules at least 1 cm in diameter. We identified 112 adrenal nodules in 96 patients. Two-dimensional PET had been performed 1 hour after administration of (18)F-FDG. Unenhanced CT was performed for attenuation correction, to determine lesion size, and for coregistration with PET data. Adrenal nodules were considered to have a positive PET result if the average standardized uptake value was greater than that of the liver. Follow-up data and biopsy reports were used to determine the pathologic status of the adrenal nodules.

Results: Thirty adrenal lesions were malignant. Twenty-five of the 30 malignant nodules had positive PET results. Twelve of 82 benign nodules were PET positive with a sensitivity of 83.3% and specificity of 85.4%. Patients with four of five malignant nodules with negative PET results had received previous therapy. The positive predictive value for detection of malignant lesions was 67%, and the negative predictive value was 93%. Conclusion: Adrenal masses that are not FDG avid are likely to be benign with a high negative predictive value. Especially in patients undergoing therapy, however, there is a small but statistically significant false-negative rate. A considerable proportion of benign nodules have increased FDG activity.

Editorial Comment

Accurate characterization of most adrenal lesions is usually obtained with either CT or MRI. The use of standard CT techniques (unenhanced CT attenuation and CT washouts-absolute percentage) isolated or combined with MRI techniques ("chemical shift imaging", diffusion-weighted images and 3D-spectroscopy) are usually sufficient for the differentiation between benign and malignant lesion in the vast majority of adrenal nodules. Nuclear medicine studies prove to be useful adjuncts. Controversial reports have been published on the role of PET/CT in this clinical and radiologic setting because some adrenal adenomas and inflammatory / infectious lesions demonstrate slight increased radiotracer uptake. Similarly, necrotic or hemorrhagic malignant adrenal lesions occasionally may cause false-negative results.

The authors of this manuscript show that although with these few limitations PET/CT is useful for characterizing adrenal nodules. In our opinion, PET/CT should be used whenever CT and / or MRI techniques are not diagnostic. One important point to consider is that all these imaging techniques are complimentary and thus can be associated since they use fundamentally different biologic principles. Following this simplified algorithm, the use of image-guided adrenal biopsy will be in the near future used only in those rare patients where adrenal lesions remain indeterminate after CT, MRI and PET/CT techniques.

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Follow-up after percutaneous radiofrequency ablation of renal cell carcinoma: contrast-enhanced sonography versus contrast-enhanced CT or MRI

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Objective: The purpose of this study was to assess, with contrast-enhanced CT or MRI as the reference imaging technique, the diagnostic performance of low-mechanical-index contrast-enhanced sonography in detecting local tumor progression after percutaneous radiofrequency ablation of renal tumors.

Materials and Methods: Twenty-nine patients with 30 renal tumors (18 men, 11 women; mean age, 73 years; range, 53-83 years) underwent percutaneous radiofrequency ablation at a single center between March 1998 and January 2007. The imaging follow-up schedule was both contrast-enhanced sonography and CT or MRI 4 months after completion of treatment and every 4 months for the first year. Thereafter, the follow-up schedule was contrast-enhanced sonography every 4 months with CT or MRI every 8 months. The chi-square test with Yates correction was used to evaluate positive and negative predictive values and accuracy.

Results: One patient was scheduled to undergo surgical resection, and another patient was lost to follow-up. Twenty-seven patients with 28 renal tumors participated in follow-up. The concordance between contrast-enhanced sonographic and CT or MRI findings was 100% for 27 of 28 tumors (96.4%) that had a hypervascular pattern before treatment. In the case of the tumor that was hypovascular at imaging performed before percutaneous radiofrequency ablation, local tumor progression was missed at contrast-enhanced sonography. The sensitivity, specificity, positive predictive value, negative predictive value, and overall accuracy of contrast-enhanced sonography were 96.6%, 100%, 100%, 95.8%, and 98.1%.

Conclusion: Contrast-enhanced sonography is an effective alternative to CT and MRI in the follow-up of renal tumors managed with percutaneous radiofrequency ablation.

Editorial Comment

Percutaneous radiofrequency (RF) ablation and cryoablation are increasingly being used as minimally invasive treatments for renal tumors in patients whose condition is inadequate for surgery. Accurate imaging evaluation of ablated tumors is essential in order to detect the adequacy of treatment and to guide patient management. In comparison with normal renal parenchyma, renal tumors treated with RF ablation usually appear as low-attenuation regions at computed tomography (CT). On conventional magnetic resonance imaging (MRI) these treated lesions appears as areas with iso- to hyperintensity at T1-weighted imaging and area of hypointensity at T2-weighted imaging. After intravenous injection of contrast material, successfully treated renal tumors appear in either one method, as focal masses that demonstrate no evidence of contrast enhancement. These focal masses continue to decrease in size during the follow-up examinations. Residual or recurrent tumor is characterized by the presence of abnormal areas of contrast enhancement.

The authors of this manuscript compared the findings at real-time low-mechanical-index contrast-enhanced sonography with those at CT or MRI in the follow-up of patients with renal cell carcinoma treated with RF ablation. They showed that in patients presenting hypervascular tumors before treatment, contrast-enhanced sonography has similar accuracy to that of CT or MRI for the detection of local tumor progression. Hypovascular renal tumors however were not adequately assessed by this technique. Since the evaluation of perfusion patterns with contrast-enhanced ultrasonography using contrast-pulse sequence imaging is useful in the follow-up of cryoablated renal tumors, it seems that this method is an effective alternative to CT and MRI in the follow-up of renal tumors in patients in whom the use of iodinated or paramagnetic contrast agent should be avoided and in those with any other clinical condition that precludes the use of CT or MRI evaluation.

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UROGENITAL TRAUMA

American Association for the Surgery of Trauma Organ Injury Scale I: spleen, liver, and kidney, validation based on the National Trauma Data Bank

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Background: This study attempts to validate the American Association for the Surgery of Trauma (AAST) Organ Injury Scale (OIS) for spleen, liver, and kidney injuries using the National Trauma Data Bank (NTDB).

Study Design: All NTDB entries with Abbreviated Injury Scale codes for spleen, liver, and kidney were classified by OIS grade. Injuries were stratified either as an isolated intraabdominal organ injury or in combination with other abdominal injuries. Isolated abdominal solid organ injuries were additionally stratified by presence of severe head injury and survival past 24 hours. The patients in each grading category were analyzed for mortality, operative rate, hospital length of stay, ICU length of stay, and charges incurred.

Results: There were 54,148 NTDB entries (2.7%) with Abbreviated Injury Scale-coded injuries to the spleen, liver, or kidney. In 35,897, this was an isolated abdominal solid organ injury. For patients in which the solid organ in question was not the sole abdominal injury, a statistically significant increase (p < or = 0.05) in mortality, organ-specific operative rate, and hospital charges was associated with increasing OIS grade; the exception was grade VI hepatic injuries. Hospital and ICU lengths of stay did not show substantial increase with increasing OIS grade. When isolated organ injuries were examined, there were statistically significant increases (p < or = 0.05) in all outcomes variables corresponding with increasing OIS grade. Severe head injury appears to influence mortality, but none of the other outcomes variables. Patients with other intraabdominal injuries had comparable quantitative outcomes results with the isolated abdominal organ injury groups for all OIS grades.

Conclusions: This study validates and quantifies outcomes reflective of increasing injury severity associated with increasing OIS grades for specific solid organ injuries alone, and in combination with other abdominal injuries.

Editorial Comment

The original AAST classification schema for traumatic renal injuries was published back in 1989 in the Journal of Trauma.(1) The sub-classification of the injuries into grades I - IV were mostly based on expert opinion and poorly constructed retrospective analyses. Despite such poor Oxford Level of Evidence of support for the classification schema, it has stood the test of time. The above paper by Tinkoff et al. is based on Nation Trauma Data Bank (NTDB) V.5.0 and Kuan et al. (2) based on NTBD V.4.0 came to the same conclusions as the reproducible validity of the scaling. The strength of the NTDB is that it is a large repository of trauma data from 405 trauma centers from across the US. Such pooling of data results in large numbers and the power to make statistically significant conclusions. As the standard of care for blunt Grade 1-IV renal injuries is nonoperative and isolated low grade penetrating injuries also trending to nonoperative, it is not surprising that NTDB data shows that 90.9% of all renal injuries can be safely managed non-operatively. Furthermore, patients with isolated kidney injuries, where severe traumatic brain injuries and deaths < 24 hours from arrival at the ED were excluded from study showed an incremental and statistically significant increase across all parameters from Grade I and II to Grade V - such as in mortality (1.5% to 10.7%), surgical exploration (4% to 73.3%), length of hospitalization (8.0 to 16.8 days) to ICU days (3.2 to 8.5 days). Another interesting finding was the economics of solid organ injuries. Hospital charges for solid organ injury were remarkably similar for liver, spleen and kidney. Average overall hospital charges are \$72, 263 - \$75,781. With isolated kidney injuries, the charges were about \$6000 per day.

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Analysis of urologic complications after radical hysterectomy

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Objective: Injuries of the ureter or bladder or development of vesicovaginal and ureterovaginal fistulas are the most serious complications in gynecological surgery.

Study Design: This study included 536 women who underwent radical hysterectomy because of invasive cancer of the cervix uteri.

Results: During the surgery the ureter was injured in 1.32% of cases, whereas the percentage of bladder injuries was 1.49. In the early postoperative period vesicovaginal or ureterovaginal fistulas appeared in 2.61% and 2.43% of cases, respectively.

Conclusion: The stage of the disease, obesity, diabetes, and postoperative surgical infection acted as predisposing factors of the urinary tract complications.

Editorial Comment

Lower urinary tract injury during gynecologic surgery is relatively uncommon. Bladder injuries are the predominant iatrogenic urologic injury. Bladder injuries are usually recognized and repaired immediately, and potential complications are typically minor. Ureteral injuries, however, are typically recognized in a delayed fashion and have the potential to be life threatening, or result in permanent kidney damage or nephrectomy.

Iatrogenic ureteral injuries are a potential complication of any open or endoscopic pelvic operation. Gynecologic surgery accounts for roughly 75% of all iatrogenic ureteral injuries, with the remaining occurring during colorectal, general, vascular, and urologic surgery. The ureter is injured in roughly 0.5-2% of all hysterectomies and routine gynecologic pelvic operations and in about 2-10% of all radical hysterectomies. Likic et al. report a lower rate of ureteral injury of only 1.32%, but this reported decline over the years is due to improved patient selection, surgery limitation to mostly low-stage disease, decreased use of preoperative radiation, and modifications in surgical technique that limit extreme skeletonization of the ureter. Of iatrogenic ureteral injuries from gynecologic surgery, roughly 50% are from radical hysterectomy, 40% from abdominal hysterectomy, and < 5% from vaginal hysterectomy. All gynecologic ureteral injuries occur to the distal third of the ureter. Ureteral injuries during laparoscopic gynecologic surgeries typically occur during laser ablative endometriosis surgery or laparoscopic assisted vaginal hysterectomy. In gynecologic surgery, bladder injury most commonly occurs during abdominal hysterectomy. The bladder can be injured at four specific sites, on incising the parietal peritoneum, entering the vesicouterine fold, separating the bladder from the uterine fundus,

cervix, or upper vagina, entering the anterior vagina, or on mobilizing or suturing the vaginal vault. If a bladder injury is noted at this time, it can usually be easily managed by a 2 or 3 layer closure. Retrograde bladder filling with blue colored saline facilitates bladder injury diagnosis. Undiagnosed intraoperative injuries to the bladder typically present days to weeks after surgery. In patients with prior pelvic irradiation, fistulas can present months to even years after hysterectomy.

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PATHOLOGY

Renal cell carcinomas with papillary architecture and clear cell components: the utility of immunohistochemical and cytogenetical analyses in differential diagnosis

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Although histologic features enable an accurate diagnosis in most renal carcinomas, overlapping morphologic findings between some renal neoplasms make subclassification difficult. Some renal carcinomas show papillary architecture but are composed extensively of cells with clear cytoplasm, and it is unclear whether they should be classified as clear cell renal cell carcinomas or papillary renal cell carcinomas. We analyzed the immunohistochemical profiles and the cytogenetic patterns of 14 renal carcinomas showing papillary architecture in which there were variable amounts of cells with clear cytoplasm. The patients were 8 women and 6 men (mean age: 54 y). Immunohistochemistry and fluorescence in situ hybridization analysis distinguished 2 different groups. The first consisted of 10 renal cell carcinomas with strong immunoreactivity for alpha-methyl coenzyme A racemase, of which 9 also expressed cytokeratin 7. All of these neoplasms showed gains of chromosome 7 or 17 and chromosome Y was lost in all the male patients whereas 3p deletion was detected only in one case. In the other 4 renal cell carcinomas, cytokeratin 7 was not detected and alpha-methylacyl-CoA racemase was positive in only 1. In these neoplasms, no gain of chromosome 7 or 17 and no loss of chromosome Y were observed, whereas 3p deletion was detected in 3 of them. None of the 14 neoplasms showed immunoreactivity for TFE3. The combined use of immunohistochemistry and cytogenetics enabled us to provide a definitive diagnosis for 12 of 14 renal cell carcinomas with papillary architecture and clear cell components: 9 cases were confirmed to be papillary renal cell carcinomas and 3 cases were confirmed to be clear cell renal cell carcinomas. Despite these ancillary techniques, 2 cases remained unclassified. Our study establishes the utility of these procedures in accurately classifying the great majority of renal cell carcinomas with these findings.

Editorial Comment

In some tumors, the pathologist finds clear cell component in an otherwise papillary tumor. The usual papillary renal cell carcinoma may be either type I or II. In the former, the cells have scant cytoplasm and due

to this cytological feature, the tumor has a blue tinge in the microscopic examination. Type II tumors have abundant eosinophilic cytoplasm. In case there is a clear cell component, the differential diagnosis is papillary renal cell carcinoma with clear cell component vs. clear cell (conventional) renal cell carcinoma with papillary features. The study by Gobbo et al. shows that immunohistochemical and cytogenetical analyses are important for the differential diagnosis.

Two other tumors that may have papillary architecture with clear cell component must be recognized: the renal carcinoma associated with Xp11.2 translocations/TFE3 gene fusions (1) and the renal cell carcinoma associated with acquired cystic kidney disease (2). The latter is easily diagnosed due to the association with patients submitted to hemodialysis. To exclude the former it is necessary that TFE3 is negative in immunohis-tochemistry.

It is controversial the significance of a clear cell component when the diagnosis is the usual papillary renal cell carcinoma. Some consider these tumors to have a good prognosis, which goes along with their low nuclear grade. Others, however, have shown that a clear cell component is associated with a higher stage (3-5).

In spite of this controversy, it is important that the practicing pathologist adds to his pathology report the finding of a clear cell component in cases of usual papillary renal cell carcinoma.

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The role of pathologic prognostic factors in squamous cell carcinoma of the penis

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Purpose: The aim of this review was to identify prognostic pathologic factors which are independent from other clinical or molecular variables.

Methods: We reviewed the literature on morphological prognostic factors emphasizing our personal experience.

Results: We found that for a proper evaluation of prognostic factors a familiarity with penile complex anatomy is required. A biopsy of the primary tumor is not useful for a complete evaluation of prognostic factors other than malignancy and a resected specimen should be utilized. Penile carcinomas have a fairly predictable pattern of local, regional and systemic spread. Pathologic factors affecting patients outcome are multiple but it is difficult from the available studies using heterogeneous pathologic methodologies, different therapeutic approaches and ecologically variable patient populations to ascertain the independent validity of these factors. Invasion of perineural spaces by tumor, lymphatic-venous embolization and histological grade appear to be the most important pathologic predictors of nodal spread and cancer mortality. Other commonly cited factors influencing prognosis are tumor depth or thickness, anatomical site and size of the primary tumor, patterns of growth, irregular front of invasion, pathologic subtypes of the SCC, positive margins of resection and urethral invasion. A combination of two factors, histological grade and depth has been reported as significant predictor of cancer regional spread. After a preselection of significant factors, nomograms have been constructed to collectively evaluate the predictive power of various clinical and pathological indicators.

Conclusions: Among various factors perineurial invasion, vascular invasion and high histological grade appear to be the most important adverse pathological prognostic factors.

Editorial Comment

This is a very comprehensive review on a tumor that is very important in Brazil. A very recent article in Int Braz J Urol has shown the epidemiologic characteristics of penile cancer in this country (1). It is a very frequent tumor, predominantly affecting low income, non-neonatal circumcised males, Caucasian patients living in North and Northeast regions of Brazil where there may be a delay in obtaining specialized medical assistance.

Dr. Cubilla is an expert on penile carcinoma living in a country (Paraguay) also with a very high frequency of this tumor. He reviews the prognostic factors in squamous cell carcinoma. Among various factors, perineural invasion, vascular invasion and high histological grade appear to be the most important adverse pathological prognostic factors and should be reported by the pathologist. He also emphasizes the importance of the gross examination of the surgical specimen.

The grading of squamous cell carcinoma of the penis is based on the production of keratin. Abundant keratin production characterizes well differentiated tumors; keratinization of isolated cells moderately differentiated tumors; and, no production of keratin undifferentiated tumors.

The histopathologic subtypes are also important in prognosis. Verrucous carcinoma is a very well differentiated variant, the base is broad in all cases with pushing, regular borders composed of broad bulbous projections, which are usually restricted to the lamina propria but may extend deeper. They are slowly growing, locally infiltrative but do not metastasize. In some reports in the literature, this tumor is erroneously called giant condyloma. Verrucous carcinomas lack the HPV-related cellular changes characteristically seen in giant condyloma, and are not causally related to HPV, unlike giant condyloma (2).

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INVESTIGATIVE UROLOGY

Role of papaverine hydrochloride administration in patients with intractable renal colic: randomized prospective trial.

Yencilek F, Aktas C, Goktas C, Yilmaz C, Yilmaz U, Sarica K Department of Urology, Yeditepe University Hospital, Istanbul, Turkey Urology. 2008; 72: 987-90.

Objectives: To evaluate the therapeutic effect of papaverine hydrochloride in the treatment of patients with renal colic pain unresponsive to conventional treatment.

Methods: From March 2007 to January 2008, a total of 561 patients with severe renal colic pain due to a ureteral stone were treated with conventional agents (hyoscine-N-butylbromide and diclofenac sodium) in the emergency and urology departments. Of these 561 patients, 110, with no response to the treatment and persistent severe pain, were randomized into 3 groups for additional treatment. The patients in group 1 (n = 37) received intravenous hyoscine-N-butylbromide, those in group 2 (n = 37) received papaverine hydrochloride, and those in group 3 (n = 36) received pethidine. Before and after treatment, all patients completed a visual analog scale (VAS) questionnaire, with a scale of 0 (no pain) to 10 (maximal complaint), to measure their subjective pain. The mean VAS score of each group was compared with that of the other groups.

Results: The pretreatment mean VAS scores of all 3 groups were not significantly different statistically from each other (4.02 +/- 1.20, 4.36 +/- 1.97, and 4.27 +/- 1.50; P > .05). However, after treatment, the mean VAS scores of the patients treated with papaverine (0.93 +/- 0.29) and pethidine (0.81 +/- 0.38) were significantly different from those of the hycosine group (3.67 +/- 2.21; P < .001). However, the mean VAS scores of groups 2 and 3 were comparable (P = .67). Unlike opioids, no papaverine-related severe side effects were observed. Conclusions: Our results indicate that papaverine hydrochloride can used in an effective manner in the management of renal colic pain in patients unresponsive to commonly used conventional agents.

Editorial Comment

Out of 561 patients with severe renal colic due to ureteral stone treated with hyoscine-N-butylbromide and diclofenac sodium, 110 who did not responded to the treatment were randomized into 3 groups for additional treatment.

The treatment protocol for these 3 groups consisted of a second repeat dose of intravenous hyoscine-Nbutylbromide (20 mg in 250 mL 0.9% physiologic saline) administered within 20 minutes to group 1 (n _ 37); papaverine HCl (60 mg in 250 mL 0.9% physiological saline) administered intravenously within 20 minutes to group 2 (n _ 37); and pethidine (50 mg in 250 mL 0.9% physiologic saline) administered intravenously within 20 minutes to group 3 (n _36). No general side effects associated with hyoscine-Nbutylbromide or papaverine HCl administration was noted. However, a mild degree of bradycardia and hypotension occurred in 2 patients (5.5%) in the pethidine group, as well as mild to moderate degree of sedation in 13 patients (36%). The authors found that the severity of the pain was significantly diminished in the papaverine and pethidine groups (without significant difference between then).

The authors speculated that smooth muscle relaxation could be accepted as the main factor for papaverine action; nevertheless, the exact underlying mechanism of action could not be derived from the present study. The authors also proposed that possible changes caused by decreased renal output following the renovascular hemodynamic changes could also be responsible for this clinical effect. It was concluded that although the classic and established conventional management of renal colic pain is highly effective, before second line opioid application, papaverine administration might be a valuable alternative for these patients.

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An in vitro study on human ureteric smooth muscle with the alpha1-adrenoceptor subtype blocker, tamsulosin.

Rajpathy J, Aswathaman K, Sinha M, Subramani S, Gopalakrishnan G, Kekre NS *British Oxygen Company Limited, Chennai, India* BJU Int. 2008; 102: 1743-5.

Objective: To study the effects of tamsulosin on ureteric contractions and its effects on the basal tone of human ureteric specimens, as clinical trials with tamsulosin have shown promising results in the spontaneous expulsion of lower ureteric calculus, but the mechanism of action of tamsulosin in the expulsion of ureteric calculus has not been elucidated in in-vitro studies on human ureters.

Materials and Methods: Human mid-ureteric specimens were obtained from live kidney donors. The specimen was transported in Krebs' solution and the isometric contraction of human ureteric smooth muscle was recorded in the presence of tamsulosin. Ureteric rings from 19 kidney donors were studied.

Results: At 100 microm tamsulosin the frequency of ureteric contraction was blocked completely, or the contraction frequency was reduced in 89% of specimens. There was no change in the frequency or in the amplitude of contraction in the remaining specimens. The basal tone of the ureter was reduced in 16% of the specimens.

Conclusion: Our results suggest that peristaltic activity in human ureteric smooth muscle is inhibited by tamsulosin. The effect of tamsulosin on basal tone is marginal.

Editorial Comment

Previous studies hypothesized that tamsulosin relaxes the ureteric smooth muscle, thereby facilitating the spontaneous passage of stone. Clinical studies demonstrated that tamsulosin decrease the colic pain and the number of colic episodes. Nevertheless, the exact mechanism of action is still controversial. The authors found that tamsulosin decreased or completely blocked the peristaltic contractions in 17 of 19 ureteric specimens studied in vitro. However, tamsulosin did not produce a decrease in baseline tension in 16 of 19 specimens. The results of this work support that the mechanism of action of tamsulosin is the inhibition of peristaltic contractions, and do not support the hypothesis that it causes a relaxation of ureteric smooth muscle.

In conclusion, the present study elegantly demonstrates that peristalsis in human ureter is inhibited by tamsulosin.

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RECONSTRUCTIVE UROLOGY

Surgical complications following radical cystectomy and orthotopic neobladders in women

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Purpose: Orthotopic neobladders have become the standard of care after radical cystectomy in select women with bladder cancer. We report early and late complications in 192 patients. Although medical complications were important, they were not the focus of this study.

Materials and Methods: Between January 1995 and December 2003, 192 women with a mean age of 50.6 years received an orthotopic neobladder after radical cystectomy for bladder cancer. Standard radical cystectomy was done. Ileal reservoirs were used, mostly in the form of an ileal W-neobladder. We evaluated the patients for functional outcome, early and late complications, and treatment for these complications.

Results: Two patients (1%) died of pulmonary embolism 1 to 2 weeks after cystectomy. Followup was 6 to 125 months (mean 54). Early complications included hemorrhage requiring reexploration in 1 case, postoperative blood transfusion in 1, wound infection in 8, prolonged ileus in 5, deep vein thrombosis in 5, pouch-vaginal fistula in 6, prolonged urinary leakage in 3, pouch-cutaneous fistula in 1 and early ureteral obstruction in 1. Of the 177 patients eligible for functional evaluation 62 experienced a total of 75 late complications, including stone disease in 18, ureteroileal stricture in 19, reflux in 22, intestinal obstruction in 2, incisional hernia in 2 and chronic pyelonephritis in 12. Early and late complications were treated accordingly with good outcomes. Conclusions: Early and late complications develop in a significant number of patients. Most early complications may be treated conservatively, while late complications are mostly treated with endourological and/or open surgery. Close lifelong surveillance of patients is mandatory to detect and properly treat these complications.

Editorial Comment

Bladder cancer and its treatment with the specific anatomical aspect became a growing issue for women in recent years (1). The ileum conduit and the continent cutaneous pouch seemed to be the only option for female patients; whereas the ileum orthotopic neobladder was already the common surgical treatment for males. In the female, the different anatomical continence mechanism within the muscular pelvis had to be considered. A solution came from one of the centers with a high cystectomy frequency for both sexes where the orthotopic neobladder was performed in the early phase (2).

Ali-El-Dein B et al. (3) published the short and long-term follow-up of 192 women who received a orthotopic ileum neobladder during the time period 1995 - 2003. The complications were primarily noted in the upper urinary tract and mostly caused by implantation strictures within the first two years after the surgery. The complications experienced are similar to others, independent to the sex. As recently noted by the Consensus Conference on Bladder Cancer of the World Health Organization (WHO), this issue cannot be solved by a single suggestion (4).

Increased knowledge of the pelvic anatomy helped to reduce, as the authors stated, the frequency of neobladder-vaginal fistula described by Stenzl (5). Although the presented data includes those with the technique of orthotopic neobladder of an early period, the continence rate is similar to others (6).

The growing anatomical knowledge results in better intraoperative identification and preservation of the sphincteric area and neurovascular structures thus improving the long-term outcome and satisfaction (7).

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Apoptosis and effects of intracavernous bone marrow cell injection in a rat model of postprostatectomy erectile dysfunction

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Objectives: To investigate the pathophysiology of postprostatectomy erectile dysfunction (pPED) in a rat model of bilateral cavernous nerve ablation (BCNA) and to assess the effects of local bone marrow mononuclear cell (BMMNC) injection on erectile dysfunction (ED) and cavernosal cellular abnormalities caused by BCNA. Design, Setting, and Participants: This was an experimental study in Fisher rats with BCNA.

Intervention: Intervention included BNCA, electrical stimulation of the pelvic ganglion, and local BMMNC injection.

Measurements: Erectile responses to electric pelvic ganglion stimulation were studied. Cavernous tissue was examined to determine the cell types undergoing apoptosis and to detect changes in protein and gene expression of neuronal nitric oxide synthase (nNOS) and endothelial nitric oxide synthase (eNOS) using real-time quantitative polymerase chain reaction (RTQ-PCR) and Western blotting. The effects of local BMMNC injection on these parameters were studied.

Results and Limitations: Diffuse apoptosis was noted in the connective tissue mesenchymal cells and vascular smooth muscle and endothelial cells. Compared with sham-operated controls, nNOS and eNOS levels were decreased after 3 wk and were normal (eNOS) or increased (nNOS) after 5 wk, suggesting spontaneous nerve regeneration. Despite nNOS recovery, erectile responses to electrical stimulation remained impaired after 5 wk, when mesenchymal cell apoptosis was the main persistent biologic abnormality. BMMNC injection decreased apoptotic cell numbers, accelerated the normalisation of nNOS and eNOS, and partially restored erectile responses at week 5.

Conclusions: Massive cell apoptosis may play a key role in the pathophysiology of pPED. In this animal model, apoptosis persisted despite spontaneous nerve regeneration, suggesting that the course of BCNA-induced cell

dysfunction was independent of reinnervation. BMMNC improved erectile function by inhibiting apoptosis and may hold promise for repairing penile cell damage caused by radical prostatectomy (RP).

Editorial Comment

Erectile dysfunction, which is a result of apoptosis caused by bilateral cavernous nerve ablation, is probably a "worst case scenario" after a radical prostatectomy (1). Even though human nerves cover the prostate surface similar to a net, post-operative erectile dysfunction can occur after an intended nerve sparing (2). The function of this net-like distribution was intraoperatively verified by Kaiho et al. (3). Although impotence following radical prostatectomy is multi-factorial, neurogenic factors also seem to play a major role. The most important prognostic factors for sexual potency recovery after radical prostatectomy are the number of spared nerve fibers, age, and sexual activity prior the surgery.

Fall and colleagues found in their rat model that bilateral cavernous nerve ablation causes apoptosis predominately in the vimentin $+/\alpha$ -actin cells and is present throughout the cavernosal bodies, similar to the smooth muscle and the endothelial cells of the cavernosal arteries. With the intracavernosal delivery of bonemarrow mononucleated cells, apoptotic cells will be replaced to recover erectile function (1). This treatment strategy may constitute a promising alternative or complement treatments aimed at stimulating nerve regeneration similar to the recently reported testis stem cells that were differentiated into cells of all three germ layers (4).

The findings to protect corporal function noted by Fall et al. are not only relevant as a possible treatment immediately after radical prostatectomy, but also may be important for the aging but still sexually active patient. The improved knowledge of the nerve concourses will help to protect function [Sievert et al. Urology 2009, accepted for publication; scheduled for publication in March 2009] which might additionally minimize the erectile dysfunction with intracorporal injected bone-marrow mononucleated cells (2).

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UROLOGICAL ONCOLOGY

The natural history of noncastrate metastatic prostate cancer after radical prostatectomy

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Objectives: To characterise the natural history of metastatic prostate cancer after radical prostatectomy (RP) in patients followed expectantly for rising prostate-specific antigen (PSA) (noncastrate metastases).

Methods: Cox proportional hazards analyses were used to assess predictors of survival among 95 patients who developed clinically detectable noncastrate metastases after RP. The initial metastatic phenotype was characterised as minimal (nodal or axial skeletal involvement) or extensive (appendicular skeletal involvement or visceral metastases). Estimates of survival after diagnosis of metastases were generated with the Kaplan-Meier method.

Results: Median disease-specific survival from diagnosis of noncastrate metastases was 6.6 yr (95% confidence interval [CI], 5.2, 7.9). The initial site of metastatic disease was bone, lymph node, and viscera in 63%, 36%, and 6% of patients, respectively. Thirteen patients (14%) had extensive disease at their first metastatic manifestation. Longer PSA doubling time in the rising PSA state (hazard ratio [HR] 0.8 for each month increase in doubling time; 95% CI, 0.67-0.94) and the initial metastatic phenotype (HR 0.3 for minimal vs. extensive disease; 95% CI, 0.1-0.6) were associated with improved survival. The prostatectomy Gleason score, lymph node status at RP, PSA level at diagnosis of metastases, and interval from surgery to diagnosis of metastases did not correlate with outcome.

Conclusion: Men who develop noncastrate metastases after RP may have a durable survival. Favourable prognostic indicators include longer PSA doubling time preceding diagnosis of metastases and initial involvement of axial skeleton or lymph nodes.

Editorial Comment

What happens to patients with metastatic prostate cancer without hormonal deprivation (noncastrate metastases)? These patients nowadays are quite rare and it is very interesting to read this article on 95 patients who developed metastases after radical prostatectomy (RP) and were not castrated.

The time from operation to development of metastases was 3.2 years median, and the median cancerspecific survival thereafter was 6.6 years.

Interestingly, in these patients neither Gleason sum score nor lymph node status at RP, PSA level at diagnosis of metastases correlated to outcome. In contrast, fast premetastatic PSA doubling time and extensive (that is, fast) development of metastases were indicators of poor survival.

The authors propose a flow diagram which may be helpful to identify patients with high risk for the development of metastases in which the first identifier of poor outcome is PSA doubling time < 3 months.

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Impact of diagnostic delay in testis cancer: results of a large population-based study

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Objective: Testis cancer is the most common cancer in young men, and its incidence continues to rise. Even if prognosis is considered as good, a group with bad prognosis still remains. Diagnostic delay (DD), defined as the time elapsing from the onset of tumour symptoms to the day of diagnosis, is a way to evaluate the rapidity of diagnosis. We assessed the relationship between DD, disease stage, and survival rate.

Methods: A series of 542 patients diagnosed with a germ cell tumour between 1983 and 2002 at health facilities in the Midi-Pyrenees region, southwest France, were asked about DD. We analysed DD together with data regarding the disease (histologic type, stage), its treatments, and prognosis (impact on survival).

Results: Mean DD was longer in seminoma $(4.9 \pm 6.1 \text{ mo})$ than in non-seminomatous germ cell tumour (NSGCT; 2.8 \pm 4.0 mo). DD was correlated with disease stage for the whole population (p = 0.014) and for NSGCT (p = 0.0009), but not for seminoma. DD had a significant impact on the 5-yr survival rate in the overall population (p = 0.001) and in the NSGCT group (p = 0.001), but not in the seminoma group. Global trends in mean DD did not change over the 20-yr study period, but we observed a slight decrease during the last decade.

Conclusions: DD is highly correlated with stage and survival in NSGCT. Urologists should promote programmes to enhance awareness and knowledge of testis cancer, so the diagnosis can be made more rapidly.

Editorial Comment

The authors report on the impact of diagnostic delay on ultimate outcome on survival. They report on a large cohort of 542 patients over a time of 20 years. This paper shows quite impressively that testicular tumors are often neglected by the patients for longer periods. Differences between seminomas and non-seminomatous germ cell tumors (NSGCT) certainly relate to the different growth rates between these tumors and how fast the patient begins to feel uncomfortable with this unclear process in his scrotum. In fact, diagnostic delay in NSGCT resulted in a significantly impaired survival. The authors state correctly that consequently, testis cancer awareness programs should be promoted and young men should be educated in scrotal self-examination.

One final question however was not addressed in this paper, that is the role of the physician. Was there any significant delay between first visit to a physician and diagnosis? Any differences between general practitioner and urologist?

I recommend thorough reading of this article.

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NEUROUROLOGY & FEMALE UROLOGY

Determining the course of the dorsal nerve of the clitoris

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Objectives: To describe the course and variation of the dorsal nerve of the clitoris (DNC) to better define its anatomy in the human adult before embarking on therapeutic strategies in this region of the body and as an aid to surgeons to help avoid iatrogenic injury to the DNC during vaginal surgical procedures.

Methods: Six human female cadavers of variable body weights were sectioned. A vertical midline incision from the base of the clitoris extending toward the direction of the umbilicus was made. The DNC was identified by dissecting out the fascia, fat, and muscles around it. The anatomy of the nerve was noted bilaterally.

Results: Distally, the DNC pierced the perineal membrane lateral to the external urethral meatus. It traversed along the bulbospongiosus muscle before traversing posterior to the crura. The DNC reappeared, hooking over the crura to lie on the anterolateral surface of the body of the clitoris, before dividing into 2 cords and terminating short of the tip of the glans clitoris.

Conclusions: The results of this study have demonstrated the unique anatomy of the distal part of the DNC. Knowledge of the anatomy of the DNC, which was consistent for all the cadavers, is important so that surgeons can avoid potential iatrogenic injuries to this structure.

Editorial Comment

The authors describe the anatomy of the dorsal nerve of the clitoris with emphasis on its exit point from the perineal membrane to its end point bifurcation. Of note is that the authors found that the course of the dorsal nerve of the clitoris was in a position that would not be affected by traditional retropubic suburethral sling operation or a transobturator suburethral sling. In addition, they noted that the nerves ended on the lateral positions of the body of the clitoris at approximately 11 and 1 o'clock with no innervation noted at the dorsal position (12 o'clock) and the nerve did not reach the tip of the clitoris but terminated approximately 1cm short of the end.

This article is well worth reviewing prior to the performance of a transvaginal urethrolysis, especially when considering the suprameatal technique (1). It will be interesting to see if there is any affectation of this nerve with the increasingly popular non-surgical transurethral radiofrequency treatment for female stress urinary incontinence (2). The illustrations are excellent in quality and impart good recollective information. In addition to considerations for surgical technique, their anatomic description may impart valuable information to those physicians counseling couples with sexual dysfunction (especially with regard to the second phase female sexual function, arousal, as described in the commentary of the manuscript) and potential optimal sites for clitoral nerve stimulation.

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Urinary symptoms before and after female urethral diverticulectomy--can we predict de novo stress urinary incontinence?

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Purpose: We assessed preoperative and postoperative urinary symptoms, and determined risk factors for de novo stress urinary incontinence after transvaginal urethral diverticulectomy.

Materials and Methods: We reviewed the case records of 25 consecutive women who had transvaginal urethral diverticulectomy. Urinary symptoms were documented before and after surgery with a structured history and examination pro forma. Demographic, clinical and imaging parameters were reviewed to determine any association with preoperative and postoperative symptoms as well as possible risk factors for postoperative stress urinary incontinence.

Results: The most common presenting symptoms were urinary urgency and frequency (60%), and dyspareunia (56%). On physical examination the most common findings were a tender anterior vaginal wall mass (88%) and urethral discharge (40%). At a mean followup of 15.1 +/- 14.9 months (median 12) the rate of urgency-frequency symptoms and dyspareunia decreased significantly from 60% to 16% and from 56% to 8%, respectively. All the patients who had urge incontinence were cured of this symptom after the operation. De novo stress urinary incontinence developed in 4 patients (16%) postoperatively, and it was mild and only necessitated surgical treatment in 1 patient. A diverticulum larger than 30 mm and proximal urethral location were significant factors (p < 0.05) for the development of de novo stress urinary incontinence.

Conclusions: Irritative bladder symptoms are common in woman with urethral diverticulum and usually resolve after surgical excision. Stress urinary incontinence developed immediately after the operation, and had a significant association with a proximal urethral location and ultrasonically measured size greater than 30 mm.

Editorial Comment

The authors review their experience of 25 consecutive women who underwent a transvaginal urethral diverticulectomy. Special emphasis was placed on presenting signs and symptoms as well as the postoperative incidence of de novo stress urinary incontinence. The authors found that diverticuluae of a size > 30 mm and with a proximal urethral location had a higher association with postoperative stress urinary incontinence. The surgeons noted that all the patients who had urge incontinence were relieved of that symptom with the operation.

The authors shed light on their thoughts on urethral diverticulectomy especially with regards to symptoms and signs before and after the surgery. Of interest is that none of the patients appears to have had a preoperative MRI but were diagnosed by ultrasound. They did note that double balloon positive pressure urethrography also identified the diverticulum well when used (in 14 of the 25 patients) but cystourethroscopy could only identify the diverticular orifice in less than half of the patient population (44%). The authors reported a 16% de novo incidence of stress urinary incontinence and did not recommend a prophylactic anti-incontinence operation even for those patients meeting the criteria that were identified in the manuscript. Their median follow up was approximately 12 months. One wonders whether the incidence of de novo stress urinary incontinence will be higher if this population of patients is revisited in two or three years from this time and the subsequent recommendation of no prophylactic surgery will change.

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PEDIATRIC UROLOGY

Early treatment of acute pyelonephritis in children fails to reduce renal scarring: data from the Italian Renal Infection Study Trials

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Pediatrics. 2008; 122: 486-90

Objectives: The American Academy of Pediatrics recommendation for febrile infants and young children suspected of having a urinary tract infection is early antibiotic treatment, given parenterally if necessary. In support of this recommendation, data suggesting that delay in treatment of acute pyelonephritis increases the risk of kidney damage are cited. Because the risk was not well defined, we investigated renal scarring associated with delayed versus early treatment of acute pyelonephritis in children. Methods: The research findings are derived from 2 multicenter, prospective, randomized, controlled studies, Italian Renal Infection Study 1 and 2, whose primary outcomes dealt with initial antibiotic treatment and subsequent prophylaxis, respectively. From the 2 studies, we selected the 287 children with confirmed pyelonephritis on acute technetium-99m-dimercaptosuccinic acid scans who underwent repeat scanning to detect scarring 12 months later. The children were 1 month to <7 years of age when they presented with their first recognized episode of acute pyelonephritis in northeast Italy.

Results: Progressive delay in antibiotic treatment of acute pyelonephritis from < 1 to >/= 5 days after the onset of fever was not associated with any significant increase in the risk of scarring on technetium-99m-dimercaptosuccinic acid scans obtained 1 year later. The risk of scarring remained relatively constant at 30.7 +/- 7%. Clinical and laboratory indices of inflammation were comparable in all groups, as was the incidence of vesicoureteric reflux.

Conclusions: Early treatment of acute pyelonephritis in infants and young children had no significant effect on the incidence of subsequent renal scarring. Furthermore, there was no significant difference in the rate of scarring after acute pyelonephritis when infants and young children were compared with older children.

Editorial Comment

Because of the long-term effects of pyelonephritis in children, including hypertension, proteinuria, and chronic renal failure, these authors studied whether early treatment of acute pyelonephritis diminishes renal scars in 287 children in a multicenter open-label parallel-group trial in Italian children, presenting with their first documented episode of acute pyelonephritis.

Initially the children were randomized to receive in one group either co-amoxiclav, or parenterally administered ceftriaxone. The second group was randomized to treat with antibiotic prophylaxis versus no treatment in a follow up study. Children were one month to seven years of age and acute pyelonephritis was the diagnosis when WBC > 25 cells/microliter in the urine, and a growth of a single organism of > 100,000 colonies in two consecutive tests as well as two or more of the following criteria: fever > 38°C, increased erythrocyte sedimentation rate or C-reactive protein level or neutrophil levels above normal for the age. Children are only included in the study with acute positive technetium DMSA scans performed within ten days of beginning antibiotic treatment and follow up scans 12 months later, and ultrasounds were also done.

There was no significant difference in the incidence of scarring with progressive delay and the initiation of antibiotic therapy from 1 to > 5 days after the onset of the fever. This was true for the subgroup of patients under two years of age. The scarring changes were found to be independent of early resolution of fever.

This article is discouraging in some respects since it has been long-held that prompt aggressive antibiotic treatment will diminish renal scarring in the setting of acute pyelonephritis. It would encourage the use of prophylactic antibiotics to prevent pyelonephritis except recent studies have cast a long shadow on the efficacy of prophylactic antibiotics to do this. Data also shows that the overall risk of scarring was independent of age between one month and seven years in this large study population. This would also suggest that early stoppage of prophylactic antibiotics and follow up in vesicoureteral refluxing patients may not be a wise choice also.

This is very good data in spite of the results confusing clinicians with older studies, it sheds light on the fact that this topic is one to be watched carefully in the future to guide further management.

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Undescended testis in older boys: further evidence that ascending testes are common Guven A, Kogan BA

Department of Pediatric Surgery, Gulhane Military Medical Academy, Etlik, Ankara, Turkey J Pediatr Surg. 2008; 43: 1700-4

Introduction: We recommend orchiopexy between 9 and 18 months of age for surgical, testicular, and psychological reasons. However, in practice, we observed many patients coming to orchiopexy at a later age. To understand this difference better, we reviewed our experience with patients undergoing late orchiopexy.

Methods: We reviewed retrospectively the office medical records of all boys who had undergone an orchiopexy between July 1997 and April 2006. We defined a "late" orchiopexy as that performed at 4 years of age or later. Each boy was examined carefully by a pediatric urologist, and preoperative, intraoperative, and postoperative findings were reviewed.

Results: There were 191 late orchiopexies in 177 patients (from a total of 587 orchiopexies in 552 patients). Median age at the operation was 7.2 years (range, 4.0-16.2). Preoperatively, the testes were palpable in 140 (72%) and nonpalpable in 51 (28%). The apparent reason for the late orchiopexy was an ascending testis (previously descended) in 85 (45%), parental delay in 41 (22%), late referral in 39 (20%), and iatrogenic cryptorchidism in 18 (9%). Ascended testes were more likely to have a history of being retractile (85% vs. 30%), to have a patent processus vaginalis (78% vs. 54%), and to be localized to the superficial inguinal area (87% vs. 50%).

Conclusions: Primary care provider and parent education on the benefits of early orchiopexy is important, but in addition, ascending testes are much more common than previously thought. Patients with retractile testes should be followed regularly.

Editorial Comment

This manuscript explores orchiopexies in boys over four and compares them to patients who were under four years of age. 552 had 587 orchiopexies. 177 of these boys had 191 orchiopexies over the age of four. The stated reasons were ascending testicles in 45%, parental delay in 22%, referral or insurance problems in 20%, entrapped testes in 9%, with the remaining cases uncertain. 85% of the ascending testis group and 30% of the others had a history of retractile testes. Palpable testes were found in 93% of the ascending testes and only 58% of the other patients. The ascending testes were more likely to be found in the superficial inguinal pouch (87%) while only 50% of the other categories had the testicles in the superficial inguinal pouch with a statistical difference of p < 0.001. The processus vaginalis was more likely to be patent in the ascending testis

group (78%) than the other group (54%) with a p-value of < 0.001. Excluding the iatrogenic group where the testes were stuck with scar tissue, the p-values were still significant.

It is becoming better understood that some testes that were found in the scrotum ascend and become fixed in a non-scrotal position. It is interesting to note that the ascending testes are more likely to be in the superficial inguinal pouch and more likely to have a patent processus vaginalis than the other delayed orchiopexy patients. It is still important for urologists to recognize that early orchiopexy before the second year of life has significant benefit. Educating primary care physicians and referring physicians about early referral is still the best policy.

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