Background: Trauma ultrasound (US) utilizing the focused assessment with sonography in trauma (FAST) is often performed to detect traumatic free peritoneal fluid (FPF). Yet its accuracy is unclear in certain trauma subgroups such as those with major pelvic fractures whose emergent diagnostic and therapeutic needs are unique. We hypothesized that in patients with major pelvic injury (MPI) trauma ultrasound would perform with lower accuracy than has previously been reported.
Methods: Retrospective analysis of adult trauma patients with pelvic fractures seen at an urban Level I emergency department and trauma center. Patients were identified from the institutional trauma registry and ultrasound database from 1999 to 2003. All patients aged > 16 years with MPI (Tile classification A2, all type B and C pelvic fractures, and type C acetabular fractures determined by a blinded orthopedic traumatologist) and who had a trauma US performed during the initial emergency department evaluation were included. All ultrasounds were performed by emergency physicians or surgeons using the four-quadrant FAST evaluation. Results of US were compared with one of three reference standards: abdominal/pelvic computed tomography, diagnostic peritoneal tap, or exploratory laparotomy. Two-by-two tables were constructed for diagnostic indices.
Results: In all, 96 patients were eligible; 9 were excluded for indeterminate ultrasound results. Of the remaining 87 patients, the pelvic fracture types were distributed as follows: 9% type A2, 72% type B, 16% type C, and 3% type C acetabular fractures. Overall US sensitivity for detection of FPF was 80.8%, specificity was 86.9%, positive predictive value was 72.4%, and negative predictive value was 91.4%. Categorization of sensitivity according to pelvic ring fracture type is as follows: type A2 fractures: sensitivity and specificity, 75.0%; type B fractures: sensitivity, 73.3%, specificity, 85.1%; and type C fractures (pelvis and acetabulum): sensitivity and specificity, 100%. Of the true-positive US results, blood was the FPF in 16 of 21 (76%) and urine from intraperitoneal bladder rupture in 4 in 21 (19%) patients.
Conclusion: US in the initial evaluation of traumatic peritoneal fluid in major pelvic injury patients has lower sensitivity and specificity than previously reported for blunt trauma patients. Additionally, uroperitoneum comprises a substantial proportion of traumatic free peritoneal fluid in patients with MPI.

Editorial Comment
The true value of FAST is in the evaluation for blood in the pericardial sac, hepatorenal fossa, splenorenal fossa, and the pelvis. One limitation of FAST is its inability to distinguish between a urine leak and blood. Overall, FAST is a quick and easy way to determine the source of bleeding in an unstable patient — from the chest, the abdomen or the pelvis.

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PATHOLOGY

Spindle Cell Lesions of the Adult Prostate

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Prostatic spindle cell lesions are diagnostically challenging and encompass a broad array of benign and malignant processes. A subset of these lesions arises only within the prostate and generally represents entities

that originate from the prostate epithelium or stroma, such as sclerosing adenosis, sarcomatoid carcinoma, stromal tumors of uncertain malignant potential (STUMP), and stromal sarcoma. Another subset of spindle cell tumors that involve the prostate are also found at other sites and include solitary fibrous tumor, leiomyosarcoma, and neural lesions among others. Finally, tumors may secondarily involve the prostate yet present as primary prostatic processes, as is evident with several cases of gastrointestinal stromal tumors (GIST). The utility of ancillary studies, including immunohistochemistry, is often limited and the main criteria for diagnosis are the morphologic findings by routine H&E stain. This review addresses the various entities that may present as spindle cell tumors within the adult prostate and discusses the functional aspects of the differential diagnosis of these lesions.

Editorial Comment

Spindle cell lesions are rare in the prostate. Among these lesions is worth commenting for the urologists sarcomatoid carcinoma and the lesions proposed by the authors to be called STUMP. There is a lot of debate in the literature about the terms sarcomatoid carcinoma vs. carcinosarcoma. These terms apply to tumors that show spindling of the cells sometimes with heterologous differentiation like osteosarcoma, condrosarcoma, angiosarcoma and others. There is a tendency to call these cases sarcomatoid carcinoma with heterologous differentiation based on studies that show a monoclonal origin for these tumors.

Stromal tumors of uncertain malignant potential (called by the authors STUMP) encompass a group of lesions that most of the times are hard to establish histologically the biological behavior in contrast to frankly sarcomatous lesions like leiomiosarcoma, rabdomiosarcoma and others. STUMP includes several patterns of lesions originating from the specialized stroma of the prostate: phyllodes tumor of the prostate, hypercellular stroma with scattered atypical yet degenerative cells, and extensive overgrowth of hypercellular stroma with the histology of a stromal nodule (1). STUMPS are considered neoplastic, based on the observations that they may diffusely infiltrate the prostate gland and extent into adjacent tissues, and often recur. Although most cases of STUMP do not behave in an aggressive fashion, occasional cases have been documented to recur rapidly after resection and a minority has progressed to stroma sarcoma.

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Inflammatory Myofibroblastic Tumors of the Urinary Tract: A Clinicopathologic Study of 46 Cases, Including a Malignant Example Inflammatory Fibrosarcoma and a Subset Associated With High-Grade Urothelial Carcinoma

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Inflammatory myofibroblastic tumor (IMT) of the urinary tract, also termed postoperative spindle cell nodule, inflammatory pseudotumor, and pseudosarcomatous fibromyxoid tumor, is rare and in the past was believed to reflect diverse entities. We reviewed a series of 46 IMTs arising in the ureter, bladder, and prostate, derived primarily from a large consultation practice. There were 30 male and 16 females aged 3 to 89 years (mean 53.6). Lesions were 1.2 to 12 cm (mean 4.2). There was a history of recent prior instrumentation in 8 cases. Morphology was similar to that previously described for IMT occurring in this region, with the exception of 1 case that focally appeared sarcomatous. Polypoid cystitis coexisted in 5 patients (11%). Mitoses were typically scant (0 to 20/10 hpf, mean 1). Necrosis was seen in 14 (30%) cases. Invasion of the muscularis propria was documented in 19 (41%). By immunohistochemistry (IHC), lesions at least focally expressed anaplastic lymphoma kinase (ALK) (20/35, 57%), AE1/3 (25/34, 73%), CAM5.2 (10/15, 67%), CK18 (6/6, 100%), actin (23/25, 92%), desmin (15/19, 79%), calponin (6/7, 86%), caldesmon (4/7, 57%, rare cells), p53 (10/13, 77%), and most lacked S100 (0/14), CD34 (0/13), CD117 (2/13, 15%), CD21 (0/5), and CD23 (0/3). ALK gene alterations were detected by fluorescence in situ hybridization (FISH) in 13/18 (72%) tested cases, including 2 with prior instrumentation; 13/18 (72%) showed agreement between FISH ALK results and ALK protein results by IHC. Most bladder IMTs were managed locally, but partial cystectomy was performed as the initial management in 7 cases and cystectomy in 1 (1 IMT was initially misinterpreted as carcinoma, 1 IMT was found incidentally as a separate lesion in a cystectomy specimen performed for urothelial carcinoma). Follow-up was available in 32 cases (range 3 to 120 mo; mean 33; median 24). There were 10 patients with recurrences (2 with 2 recurrences). Recurrences were unassociated with muscle invasion or with ALK alterations. In 2 cases, tumors of the urinary tract (TURs) showing IMT preceded (1 and 2 mo, respectively) TURs showing sarcomatoid carcinoma with high-grade invasive urothelial carcinoma accompanied with separate fragments of IMT. Even on re-review the IMT in these 2 cases were morphologically indistinguishable from other cases of IMT, with FISH demonstrating ALK alterations in the IMT areas in one of them. Both these patients died of their carcinomas. Lastly, there was 1 tumor with many morphological features of IMT and an ALK rearrangement, yet overtly sarcomatous. This case arose postirradiation for prostate cancer 4 years before the development of the lesion, with tumor recurrence at 4 months and death from intra-abdominal metastatic disease at 9 months. In summary, urinary tract IMTs are rare and share many features with counterparts in other sites, displaying similar morphology and immunogenotypic features whether de novo or postinstrumentation. Typical IMTs can be locally aggressive, sometimes requiring radical surgical resection, but none of our typical cases metastasized, although they can rarely arise contemporaneously with sarcomatoid urothelial carcinomas. For these reasons, close follow-up is warranted.

Editorial Comment

It is controversial in the literature whether inflammatory myofibroblastic tumor of the urinary tract is an inflammatory or a neoplastic lesion. This is the reason for the vast list of synonyms: reactive pseudosarcomatous response, postoperative spindle cell nodule, inflammatory pseudotumor, nodular fasciitis, pseudomalignant spindle cell proliferation, pseudosarcomatous myofibroblastic proliferation, pseudosarcomatous myofibroblastic tumor, and inflammatory myofibroblatic tumor.

The lesion mimics both sarcomas and spindled carcinomas, the latter compounded by their expression of various cytokeratins (1). Considering that the lesion in the urinary tract has been benign in almost all series it would be similar to nodular fasciitis elsewhere. However, it differs by nodular fasciitis in its capacity to infiltrate deeply into the detrusor muscle (2).

The identification of ALK alterations in bladder lesions suggests that, despite the frequent similarity to nodular fasciitis, inflammatory myofibroblastic tumor is neoplastic (3). There is a clonal aberration typically involving chromosome 2p. This results in rearrangement of the ALK gene which codifies a receptor of tyrosine-kinase and hence over-expression of ALK-1 protein. This over-expression of the ALK protein is also seen in anaplastic large cell lymphomas.

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INVESTIGATIVE UROLOGY

Testicular Volume Measurement: Comparison of Ultrasonography, Orchidometry, and Water Displacement

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Objectives: To determine the accuracy of orchidometry and ultrasonography for measuring the testicular volume by comparing the resultant measurements with the actual testicular volume in humans.
Methods: The testicular volume of 40 testes from 20 patients with prostate cancer (mean age +/- SD 74.5 +/- 7.5 years) was measured using the Prader orchidometer and ultrasonography before therapeutic bilateral orchiectomy. The ultrasound measurements of testicular volume were calculated using three formulas: length (L) x width (W) x height (H) x 0.52, L x W2 x 0.52, and L x W x H x 0.71. The actual testicular volumes were determined by water displacement of the surgical specimen.
Results: The mean actual testicular volume of the 40 testes was 9.3 cm3 (range 2.5 to 23.0). A strong correlation was found between the testicular volume calculated by the three ultrasound formulas and the actual volume ($r = 0.910$ to 0.965, $P < 0.0001$) and was stronger than the correlation with the Prader orchidometer ($r = 0.818$, $P < 0.0001$). The smallest mean difference from the actual testicular volume was observed with the formula L x W x H x 0.71, which overestimated the actual volume by 0.80 cm3 (7.42%). The measurements using the Prader orchidometer correlated with the actual testicular volume and with the testicular volume calculated using the three ultrasound formulas ($r = 0.801$ to 0.816, $P < 0.0001$). However, the orchidometer measurements had the largest mean difference from the actual testicular volume (6.68 cm3, 81.7%).
Conclusions: The results of this study have shown that measuring the testicular volume by ultrasonography is more accurate than by the Prader orchidometer, and the formula L x W x H x 0.71 was the most accurate for calculating the testicular volume.

Editorial Comment
This is a straightforward research work, which objectively demonstrates that ultrasonographic evaluation of testicular volume is accurate. The authors compared ultrasound evaluation by the ellipsoid volume formula (2