findings. A hyperdense renal cyst can be considered benign if it is sharply marginated or homogeneous or demonstrates a hematocrit effect on nonenhanced and contrast-enhanced scan and demonstrates no significant enhancement on post-contrast scans. Because internal structures within a hyperdense renal cyst cannot be well evaluated by nonenhanced CT, US or MR imaging can be used for the differentiation. When sonography is performed, the mass is usually cystic but occasionally do not present all the sonographic criteria for a simple cyst. Actually internal septations and absence of posterior wall trough-transmission are frequently found.

The authors present an interesting observation, which should be useful for adequate characterization of hyperdense renal lesion found on nonenhanced CT scans particularly in those patients submitted to a non-contrast CT scans for the detection of urolithiasis. They found that the attenuation of a renal mass and its degree of heterogeneity are useful findings in distinguishing a high-attenuation renal cyst from renal cell carcinoma on unenhanced CT images. If the density of the mass is greater than 70 HU and the mass is homogeneous, there is a chance of almost 100% (99.9%) that the mass is benign hyperdense renal cyst. They concluded that in this situation there is no need for contrast enhanced CT scan and high-resolution US studies or MR imaging can be used as complimentary test.

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UROGENITAL TRAUMA

Management of High Grade Renal Trauma: 20-Year Experience at a Pediatric Level-I Trauma Center

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Purpose: In the last 20 years the management of high grade, blunt renal trauma at our institution has evolved from primarily an operative approach to an expectant nonoperative approach. To evaluate our experience with the expectant nonoperative management of high grade, blunt renal trauma in children, we reviewed our 20-year experience regarding evaluation, management and outcomes in patients treated at our institution.
Materials and Methods: We retrospectively studied all patients sustaining renal trauma between 1983 and 2003. Medical records were reviewed for mechanism of injury, assigned grade of renal injury, patient treatment, indications for and timing of surgery, and outcome. Injuries were categorized as either low grade (I to III) or high grade (IV to V).
Results: We reviewed the medical records of 164 consecutive children who sustained blunt renal trauma between 1983 and 2003. A total of 38 patients were excluded for inadequate information. Of the remaining 126 children 60% had low grade and 40% had high grade renal injuries. A total of 11 patients (8.7%) required surgical or endoscopic intervention for renal causes, including 2 for congenital renal abnormalities and 1 for clot retention. Eight patients (6.3%) required surgical intervention for isolated renal trauma, of whom 2 (1.6%) required

immediate surgical intervention for hemodynamic instability and 6 (4.8%) were treated with a delayed retroperitoneal approach. Only 4 patients (3.2%) required nephrectomy. All patients receiving operative intervention had high grade renal injury.
Conclusions: Initial nonsurgical management of high grade blunt renal trauma in children is effective and is recommended for the hemodynamically stable child. When a child has persistent symptomatic urinary extravasation delayed retroperitoneal drainage may become necessary to reduce morbidity. Minimally invasive techniques should be considered before open operative intervention. Early operative management is rarely indicated for an isolated renal injury, except in the child who is hemodynamically unstable.

Editorial Comment

Henderson et al. is another paper supporting that contemporary management of blunt renal injury in the child is expectant management (1). They had a surprisingly high percentage of Grade IV and Grade V (shattered kidney) injuries that were managed successfully. As in other solid organs like the spleen and liver, where bunt trauma is managed almost exclusively conservatively, the same is true for the kidney. Clearly, the management pendulum for even high grade blunt injuries has shifted to a nonsurgical algorithim. Only in the exsanguinating and unstable patient, is surgical exploration of blunt renal injury an absolute indication. All other kidney injuries are just relative indications. One proviso when dealing with trauma in children, however, is that they do not manifest changes in their vital signs until severe degrees of blood loss. Due to increased physiologic reserve, vital signs in the child can stay in the normal range even in the presence of shock. Tachycardia and poor skin perfusion are often the only signs of hypovolumia. Only blood volume losses greater than 30% in children manifest drops in blood pressure, narrowed pulse pressure, and absent peripheral pulses.

Reference

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Management and Hospital Outcomes of Blunt Renal Artery Injuries: Analysis of 517 Patients from the National Trauma Data Bank

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Background: Blunt renal artery injuries are rare and no single trauma center can accumulate substantial experience for meaningful conclusions about optimal therapeutic strategies. The purpose of this study was to assess the incidence of renal artery injuries after different types of blunt trauma, and evaluate the current therapeutic

approaches practiced by American trauma surgeons and the effect of various therapeutic modalities on hospital outcomes.
Study Design: This was a National Trauma Data Bank study including all blunt trauma admissions with renal artery injuries. Demographics, mechanism of injury, Injury Severity Score, Abbreviated Injury Score for each body area (head, chest, abdomen, extremities) injuries, type of management (nephrectomy, arterial reconstruction, or observation), time from admission to definitive treatment, and hospital outcomes (mortality, ICU, and hospital stay) were analyzed. Multiple and logistic regression analyses were used to examine the relationship between type of management and hospital outcomes.
Results: Of a total of 945,326 blunt trauma admissions, 517 patients (0.05%) had injuries to the renal artery. Of the 517 patients, the kidney was not explored in 376 (73%), 95 (18%) patients had immediate nephrectomy, and 45 (9%) patients underwent surgical revascularization. In 87 of 517 (17%) patients, renal artery injury was the only intraabdominal injury. Of the 87 patients with isolated renal artery injuries, 73 (84%) were observed, 7 (8%) underwent surgical revascularization, and 7 (8%) had early nephrectomy. Multiple regression analysis demonstrated that patients who had surgical revascularization had a considerably longer ICU and hospital stay than observed patients. Patients who had nephrectomy had a considerably longer hospital stay than observed patients.
Conclusions: Blunt renal artery injury is rare. Nonoperative management should be considered as an acceptable therapeutic option.

Editorial Comment

The National Trauma Data Bank (NTDB) is a very useful and powerful database tool for which one can perform outcomes research of urological trauma. Access to the data is free and can easily be accessed over the internet. The NTDB is a nation wide trauma registry from trauma centers across the United States and Puerto Rico, and contains over 2 million records. The goal of the NTDB is to inform the medical community, the public, and decision makers about a wide variety of issues that characterize the current state of care for injured persons. The information contained in the data bank has implications in many areas including epidemiology, injury control, research, education, acute care, and resource allocation. The NTDB is a very useful and powerful database tool for which one can perform outcomes research of urological trauma. Access to the data is free and easily accessed over the internet.

As to blunt renal artery injuries that result in intimal injury and subsequent arterial thrombosis, Sangthong et al report on their review of renal injuries from across the US. Clearly, when there are two normal kidneys and the patient has normal renal function, renal artery thrombosis is best managed conservatively. Even when recognized promptly, exploration and renal artery repair is often not successful, and when successful, typically preservation of renal function is very poor. Exploration is indicated, however, in cases of injured solitary kidneys or in the very rare instance of bilateral renal artery thrombosis.

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