Perinephric Abscess: An Unusual Late Infectious Complication of Renal Biopsy

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ABSTRACT

Perinephric hematomas are common after percutaneous needle biopsy of the kidney and are usually clinically occult. Infectious complications in the absence of concomitant urinary tract infection, however, are unusual. A patient is reported who developed perinephric abscess (Streptococcus pneumoniae) at the site of a renal biopsy performed five years earlier. Wisdom tooth impaction and extraction occurred shortly after the biopsy. It is speculated that bacteremia of dental origin plus immunosuppressive therapy acted adjunctively to produce localization of infection in an area of previous trauma. Elective procedures that may induce transient bacteremia after percutaneous kidney biopsy may be hazardous and are best avoided. Antibiotic prophylaxis for such procedures should be considered.

Percutaneous needle biopsy of the kidney is a well accepted diagnostic tool in clinical nephrology. Clinically apparent complications occur in 4.6 percent to 9.4 percent of biopsies performed and are most commonly hemorrhagic in nature. Biopsy related infections are unusual and generally associated with a concomitant urinary tract infection. An unusual, late, infectious complication of percutaneous needle biopsy of the kidney is reported.

Case Report

M.M. is a 28 year old white female with a history of systemic lupus erythematosus since 1972. Proteinuria and an active urinary sediment at the time of her presentation led to a right renal biopsy which showed diffuse proliferative glomerulonephritis. Following diagnosis, she was treated with prednisone. In 1975, an increase in proteinuria (13 g per 24 hrs) led to a repeat right renal biopsy which demonstrated progression of the diffuse proliferative glomerulonephritis. The biopsy was complicated by 48 hours of severe right flank pain without gross hematuria, and transfusion was not required. She was treated with increased prednisone dosage. Approximately two months after the second biopsy she underwent dental extractions for impacted wisdom teeth. Between 1975 and 1980, her renal disease remained relatively quiescent, although steroid dependent arthralgias continued.

Four months prior to her present hospitalization, recurrent rash and arthritis led to the institution of azathioprine (125 mg daily). Prednisone was increased to 60 mg daily and then tapered. The arthralgias responded to therapy, but vague malaise persisted. In February, 1980, she was admitted with a 10 day history of right flank pain, temperature to 103°F, and shaking chills without genito-urinary symptoms. Physical examination demonstrated a tender right upper quadrant mass. Urinalysis showed three to five white blood cells per high power field (WBC/HPF) and occasional bacteria. An abdominal ultrasound revealed an eight centimeter echo-free mass at the lower pole of the right kidney. An intravenous pyelogram (IVP) further demon-
strated anterior displacement of the ureter and rotation of the kidney suggestive of a lower pole mass. A urine culture grew > 10^6 Escherichia coli sensitive to gentamicin. Since the patient was allergic to cephalosporins, sulfa drugs, and penicillin, therapy with aminoglycosides was initiated for a presumptive renal carbuncle. The patient failed to respond to adequate antibiotic therapy and underwent selective renal angiography which demonstrated a hypovascular mass inferior to the right kidney.

Right retroperitoneal exploration revealed a 10 cm extracapsular chronic inflammatory mass confined within Gerota’s fascia and adherent to the inferior pole of the right kidney. A two centimeter erosion of the lower pole cortex was noted. The mass was fibrinous, fat-covered, and had a purulent center. Histology and cytology were negative for malignancy. A culture grew Streptococcus pneumoniae (pneumococcus). The organism was resistant to aminoglycosides, and vancomycin therapy was initiated. The post-operative course was unremarkable, and the patient has not had recurrence of fever or malaise during a 15-month follow-up.

Discussion
Perinephric hematomas are common complications of percutaneous renal biopsies, but are usually clinically occult. Prior to computerized tomography, perirenal hematomas were reported in only 1.4 percent of biopsies. Recent studies utilizing computerized tomography, however, demonstrate a 60 to 85 percent incidence of post-biopsy perirenal hematomas which resolve within one to three months after the biopsy. A low morbidity and frequent spontaneous resolution serve to minimize the clinical importance of this complication. Hematomas, however, may serve as ideal sites for abscess formation.

In spite of the frequency of sub-clinical perinephric hematomas, there is a paucity of reported cases of post-renal biopsy perinephric abscesses. Thorley, in a large series of perinephric abscesses, reported two patients that developed abscesses one to three weeks following renal biopsy. Slotkin alludes to one case in a survey of 5000 renal biopsies. Lee reported a case of indurated perinephritis, without true abscess formation, occurring in a patient biopsied for evaluation of chronic pyelonephritis.

It was postulated by the present authors that the reported patient developed a retroperitoneal hematoma following the second renal biopsy which was seeded with S. pneumoniae during a transient, dental-induced bacteremia. The infection remained indolent until unmasked by the addition of azathioprine to her immunosuppression. Although this pathophysiologic sequence in formation of the perinephric abscess cannot be confirmed, the clinical setting, organism and surgical findings provide strong circumstantial evidence. A ruptured renal carbuncle, retrograde urinary inoculum, or hematogenous seeding of the retroperitoneum unrelated to the biopsy are alternative explanations.

Clinically silent perinephric hemorrhage is a common sequela of percutaneous needle biopsy of the kidney. The reported case illustrates an infection of such a hematoma and suggests that elective procedures which may induce transient bacteremia should be avoided after percutaneous renal biopsy to allow hematoma resolution. Prophylactic antibiotic coverage could alternatively be considered.

References