SUCCESSFUL CONSERVATIVE TREATMENT OF A HEPATIC ABSCESS ORIGINATING FROM A RUPTURED RENAL ABSCESS IN AN ELDERLY FEMALE

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SUMMARY

A liver abscess originating from a ruptured renal abscess is a very rare clinical condition. In the past, the commonly recommended strategy for extrarenal abscess extension involved surgical management. For this case, mindful of the advanced age of patient, we had success in treating with parenteral antibiotics and computed tomography (CT)-guided drainage. An 86-year-old female presented to our emergency department with right flank pain for 1 month and high fever. A series of examinations were done, and xanthogranulomatous pyelonephritis with multiple abscess formation involving the liver and ruptured renal abscess was diagnosed. We successfully treated with CT-guided drainage, followed by parenteral antibiotic administration. She gradually recovered and was discharged 12 days after admission. To our knowledge, this is the first case of a liver abscess originating from a ruptured renal abscess and successful conservative treatment. [International Journal of Gerontology 2008; 2(3): 136–139]

Key Words: antibiotics, kidney stones, liver abscess, rupture, xanthogranulomatous pyelonephritis

Introduction

We present a very rare case of xanthogranulomatous pyelonephritis with multiple abscess formation involving the liver and a ruptured renal abscess in an 86-year-old female. We salvaged the right kidney of this elderly female by computed tomography (CT)-guided drainage and parenteral antibiotics. To our knowledge, this is the first case of a liver abscess originating from a ruptured renal abscess and successful treatment by a conservative method.

Case Report

An 86-year-old female presented to our emergency department (ED) with right flank pain for 1 month. According to her family’s statement, she had hypertension and chronic ischemic heart disease, with current medications of aspirin, an angiotensin receptor blocker, an alpha-blocker and isosorbide mononitrate from the outpatient department of the cardiovascular section. No other history of operation was noted except prior ophthalmic surgery. Two years prior to visiting our ED, she had been admitted to our ward of nephrology for 1 week because of acute right-sided pyelonephritis. A staghorn stone with hydronephrosis was found and surgical intervention was suggested by the urologist, but her family decided to treat conservatively.

On arrival at our ED, her consciousness was clear; Glasgow Coma Scale was E4M6V5, and the initial vital
signs were as follows: body temperature, 39.2°C; pulse rate, 98/min; respiration rate, 18/min; and blood pressure, 161/65 mmHg. The physical examination revealed no obvious finding except pain on palpation over the right costovertebral angle. The abdomen was soft and no muscle guarding or rebounding tenderness was found. The blood test showed: hemoglobin, 8.8 g/dL; white blood count, 12,500/μL; neutrophils, 78.9%; lymphocytes, 15.6%; monocytes, 4.8%; and platelets, 587,000/μL. Biochemical data were: glucose, 128 mg/dL; aspartate aminotransferase, 13 U/L; amylase, 43 U/L; serum urea nitrogen, 12 mg/dL; creatinine, 0.9 mg/dL; sodium, 137 mEq/L; potassium, 2.9 mEq/L; and C-reactive protein, 13.52 mg/dL. Urine analysis revealed a pH of 6.5, 16 red blood cells per high-power field, and numerous white blood cells per high-power field. The chest X-ray showed cardiomegaly, tortuous thoracic aorta with calcification, and pulmonary congestion. The kidneys, ureter, bladder radiograph (Figure 1) revealed a right renal stone and several right-sided ureteral stones. Parenteral antibiotics with flomoxef sodium 1.0 g and tobramycin 60 mg every 8 hours were administered, and complete abdominal CT was performed for further evaluation.

The whole abdominal CT showed deformity of the right kidney with calcification and multiple abscess formation, and lateral extension of the largest abscess involving the pararenal space, Gerota’s fascia, muscles of the abdominal wall and inferior aspect of the right lobe of the liver was also noted. Xanthogranulomatous pyelonephritis with multiple abscess formation was suggested by the radiologist (Figure 2). The urologist was consulted and broad-spectrum antibiotic administration and admission were suggested. CT-guided drainage was performed after admission by the radiologist with an 8F pigtail catheter with multiple side holes. In the first day, 80 mL of red-green pus-like fluid was drained. The blood culture showed no growth in 5 days after admission. The midstream urine culture
C.Y. Chou et al showed contamination, and the pus culture of the liver abscess revealed *Escherichia coli*, which was sensitive to flomoxef and amikacin. The patient became afebrile after the second day of admission, and the amount of drainage from the pigtail catheter decreased gradually to 15 mL per day 10 days after admission. A urodynamic study showed a low flow rate with residual urine of over 350 mL. The follow-up abdominal CT (Figure 3) 11 days after admission showed a residual abscess and connection of the perirenal abscess with the right collecting system. The radiologist suggested further treatment and removal of the catheter if the amount of drainage was less than 10 mL per day. She was discharged 12 days after admission with oral cefuroxime 250 mg twice a day and 16F urinary catheter insertion. The abdominal pigtail catheter was removed 2 weeks after discharge at our outpatient department.

**Discussion**

Perirenal abscess occurs usually as a result of extension of an intrarenal abscess into the perirenal space, particularly in the presence of obstruction or xanthogranulomatous pyelonephritis. Perforation into the peritoneal cavity or rupture into the colon is rare. To our knowledge, this is the first clinical case of ruptured renal abscess with liver involvement.

Xanthogranulomatous pyelonephritis was first described by Schlagenhaufer in 1916, and is mainly diagnosed by pathology. It is an uncommon but severe chronic infection of the renal parenchyma. Characteristic of this disorder is destruction of the renal parenchyma with replacement by granulomatous tissue containing lipid-laden macrophages (foam cells). Although the cause has not definitely been identified, it seems to be associated with renal obstruction plus chronic urinary tract infection. This entity should be considered in the presence of a focal mass and staghorn calculi. The diagnosis is suggested by CT in 44% of cases and is useful in planning the operative procedure.

Sonography may be helpful but is usually operator-dependent. Thus, radiographic techniques are necessary in critical cases or if diagnosis is not definitive based on laboratory examination and X-rays. A CT scan seems to be the best diagnostic tool in the ED, and it could also help to identify the extent of the problem.

Empirical antimicrobial therapy has been used to control most intrarenal abscesses. Monotherapy with extended-spectrum penicillin, cephalosporin, quinolones, or combination therapy with a beta-lactam antibiotic (ampicillin or cefazolin) plus an aminoglycoside was acceptable. Failure of antimicrobial therapy alone was usually due to a large abscess, obstructive uropathy, old age or urosepsis. If obstructive uropathy is present, drainage by percutaneous nephrostomy is appropriate and needed.

Patients with xanthogranulomatous pyelonephritis are generally not cured by antimicrobials alone. Surgical excision is usually necessary. The diagnosis is often not made preoperatively. Malek et al. devised a pathologic classification into three stages, based on the amount of renal and perirenal involvement. The xanthogranulomatous process is confined to the kidney in stage I (nephric), involving Gerota’s fat and the renal parenchyma in stage II (perinephric), and extending to the retroperitoneum in stage III (paranephric). Removal of the involved kidney and perirenal fat is preferred in cases of stage III. In contrast to most intrarenal abscesses, antimicrobial therapy alone is usually not enough, and drainage under CT or ultrasound guidance is typically necessary. Partial or total nephrectomy is sometimes needed if drainage fails or is contraindicated.

Like most abdominal abscesses, although surgical treatment for complicated intrarenal or perirenal abscesses was usually suggested, more reports favoring conservative treatment were advanced. Peces et al. and Lim et al. each showed a case of emphysematous pyelonephritis with perirenal abscess cured with...
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conservative medical treatment. Ahmadnia et al. reported six cases of successful percutaneous drainage for perirenal abscess after kidney transplantation under appropriate antibiotic coverage. Bingöl-Koloğlu et al. collected 17 pediatric cases of xanthogranulomatous pyelonephritis from 1970 to 1999. Although nephrectomy was the proper choice, they found that complications were noted only in patients who underwent nephrectomy without initial drainage procedures. Thus, they strongly recommended percutaneous drainage of the abscess and adjuvant antibiotic therapy prior to nephrectomy to avoid complications.

Based on clinical CT findings, Lim et al. reported in 1998 that fluid in the perirenal space may extend into the adjacent space, into the bare area of the liver on the right, into the superior extraperitoneal space on the left, into the lower retroperitoneal space of the abdomen and pelvis, and towards the midline from each perirenal space below the level of the superior mesenteric artery. Thus, in this case, the liver involvement may be due to perforation and direct invasion, or spread by the pus flowing to the peritoneal cavity. Tsukagoshi et al. had also reported a case of perinephric abscess secondary to a staghorn calculus presenting as a subcutaneous abscess.

In this case, xanthogranulomatous pyelonephritis could not be proved as no histologic report was available, although surgical removal of the involved kidney and perirenal fat is typically preferred in cases of stage III xanthogranulomatous pyelonephritis or large perirenal abscess. We demonstrated that a ruptured renal abscess extending to the pararenal space or peritoneal cavity with liver abscess formation could, in this instance, be conservatively and successfully treated by CT-guided drainage with parenteral antibiotic administration, instead of a surgical approach.

In conclusion, in the past, surgical intervention for stage III xanthogranulomatous pyelonephritis was a common strategy. For this case, considering the advanced age of the patient, we successfully treated with parenteral antibiotics and CT-guided drainage. To our knowledge, this is the first case of liver abscess originating from a ruptured renal abscess successfully managed conservatively, with salvage of the affected kidney.

References