Recurrent Retroperitoneal Abscess Due to Perforated Colonic Diverticulitis in a Patient with Polycystic Kidney Disease

Szu-Yuan Li[1,5], Jeng-Kai Jiang[2,5], Yen-Hwa Chang[3,5], Te-Chang Wu[4], Wu-Chang Yang[1,5], Yee-Yung Ng[1,5]*

[1]Division of Nephrology, Department of Medicine, Divisions of [2]Colorectal Surgery and [3]Urology, Department of Surgery, Taipei Veterans General Hospital, [4]Department of Radiology, Chi Mei Medical Center, and [5]National Yang-Ming University School of Medicine, Taipei, Taiwan, R.O.C.

Patients with autosomal dominant polycystic kidney disease (ADPKD) usually have extrarenal manifestations. We report the case of a 53-year-old man with ADPKD who presented with a retroperitoneal abscess of the left side after undergoing bilateral nephrectomy for a cyst that had repeatedly bled for 1 year. The abscess recurred despite drainage with a pig-tail catheter and antibiotic treatment. Fistulography with injection of diluted contrast medium via the pig-tail catheter showed an accumulation of contrast medium in the descending colon, which indicated a fistula between the abscess and the descending colon. A portion of the descending colon was resected, and multiple diverticulitis with 1 perforation in the resected specimen was observed. The findings support a diagnosis of retroperitoneal abscess caused by a perforated diverticulum—an extrarenal manifestation of ADPKD. [*J Chin Med Assoc* 2009;72(3):153–155]

Key Words: diverticulitis, fistulography, polycystic kidney disease, retroperitoneal abscess

Introduction

Autosomal dominant polycystic kidney disease (ADPKD) is one of the most common reasons for regular hemodialysis (HD).[1] Although previous studies have shown that patients with end-stage renal disease (ESRD) due to ADPKD have a higher prevalence (20%) of colon diverticulitis than do those with ESRD due to other etiologies (3%),[2] abscess formation in the left renal fossa caused by a perforated diverticula has not been reported in the literature. We present the case of an ADPKD patient undergoing regular HD after bilateral radical nephrectomy for repeated cyst bleeding, who developed recurrent retroperitoneal abscess on the left side due to chronic diverticulitis with perforation in the descending colon.

Case Report

A 53-year-old man with ADPKD began receiving regular HD after undergoing bilateral radical nephrectomy for repeated cyst bleeding in June 2004. His general response to HD was good in the initial months. Unfortunately, he was brought to our hospital due to general weakness, fever, and knocking pain in the left flank for 3 days in November 2005. Physical examination showed a body temperature of 38.2°C, blood pressure of 150/78 mmHg, pulse rate of 82 beats/minute, and respiratory rate of 20 breaths/minute. Breathing sounds and bowel sounds were normal. A complete blood count indicated the following values: white blood cell count, 15,400/mm^3; hemoglobin, 10.3 g/dL; and platelet count 187,000/mm^3. Other laboratory results were: C-reactive protein, 21.3 mg/dL (normal, < 0.5 mg/dL); blood urea nitrogen, 72 mg/dL (normal, 201 mmol/L); and creatinine, 10.2 mg/dL (normal, 902 μmol/L). Serum sodium, potassium, glucose, and liver function were normal. Stool examination showed a value of 2+ for occult blood and 2+ for red blood cells. Contrast-enhanced abdominal computed tomography (CT) showed a heterogeneous, low-density lesion with relatively clear demarcations and gas bubbles within the left renal

*Correspondence to: Dr Yee-Yung Ng, Division of Nephrology, Department of Medicine, Taipei Veterans General Hospital, 201, Section 2, Shih-Pai Road, Taipei 112, Taiwan, R.O.C.
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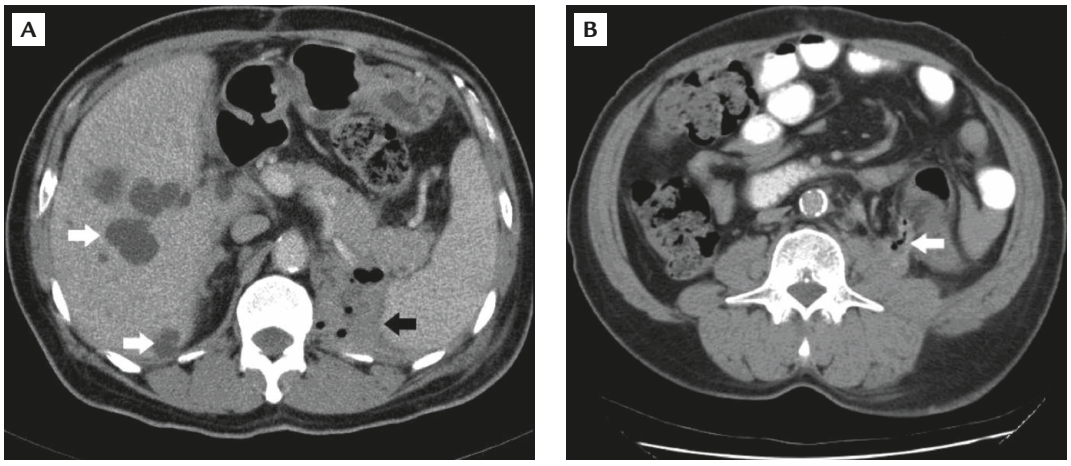

Figure 1. (A) Computed tomography shows a relatively well-demarcated heterogeneous, low-density lesion and gas bubbles in the left suprarenal region (black arrow). Several low-density hepatic cysts (white arrows) were observed in our patient, who had undergone bilateral nephrectomy. (B) A gas-containing track (arrow) communicating with the descending colon and retroperitoneum was observed, just anterior to the left psoas muscle.

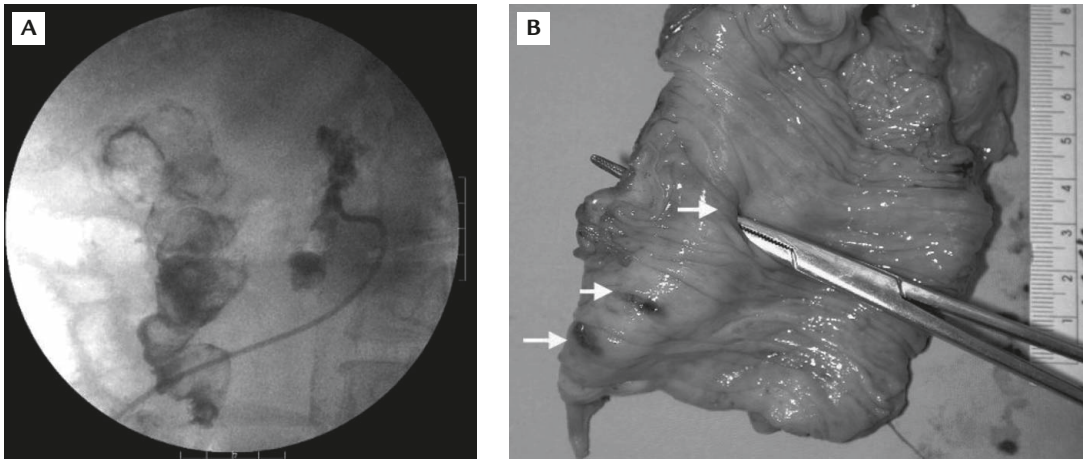

Figure 2. (A) Fistulography with injection of diluted contrast medium through a pig-tail catheter shows accumulation of contrast medium in the left suprarenal region and opacity in the descending colon, indicating fistula formation. (B) Several diverticula were observed in the resected specimen (arrows), 1 of which was perforated.

fossa (Figure 1). A pig-tail catheter was inserted to drain the pus. The pus was positive for cefazolin-sensitive *Escherichia coli*. Three days after the pus was drained and the patient was treated intravenously with cefazolin (1 g once daily), the fever and knocking pain subsided. The heterogeneous, low-density lesion disappeared by the third week after treatment.

One month later, the patient experienced similar symptoms, and it was found that the abscess in the left renal fossa had recurred. Pus culture was again positive for cefazolin-susceptible *E. coli*. The symptoms and abscess subsided 2 weeks after the pus was drained with a pig-tail catheter and cefazolin treatment. However, a third episode of abscess in the left renal fossa occurred 3 weeks later. This time, contrast-enhanced CT showed a gas-containing track between the descending colon and the retroperitoneum just anterior to the left psoas muscle (Figure 1). Fistulography confirmed fistula formation between the left suprarenal region and the descending colon (Figure 2). Therefore, the patient underwent segmental resection of the descending colon and primary anastomosis. Pathologic examination of the resected colon revealed several diverticula, 1 of which was perforated (Figure 2). Histopathologic examination of the perforated diverticulitis showed a track infiltrated with mixed heavy chronic inflammatory cells and fibrosis penetrating the muscular layers. Antibiotics were administered for 1 week after surgery, and the patient recovered well. The left renal fossa abscess did not recur.

Discussion

In this case, all cultures from the left renal fossa were positive for *E. coli* with the same antibiotics susceptibility test. These recurrences indicated the presence of an occult infection rather than inadequate or inappropriate antibiotics and drainage. The chronic inflammatory status of the resected colon and the lack of abscess formation in the left renal fossa after segmental resection of the perforated diverticulum indicated diverticulitis as the source of infection.

Previous studies have shown a greater incidence of diverticulitis among patients with ADPKD with ESRD than in ESRD patients without ADPKD (83% *vs.* 32%).[3] Not only do ESRD–ADPKD patients have a higher incidence of diverticulitis, but they also have a higher complication rate associated with colon diverticulitis. Colon perforation, fistula formation, intra-abdominal abscess, and generalized peritonitis are more frequent in ADPKD patients.[2,4] However, colonic diverticula are usually asymptomatic. Major complications of diverticulitis, including perforation-related peritonitis, sepsis and shock, occur in only a small percentage of patients. In this case, occult blood was observed in the stool, but the absence of diverticulum in the first and second abdominal CT scans delayed the diagnosis of diverticulitis-induced abscess formation in the left renal fossa and resulted in the patient being discharged after supportive treatment. The literature indicates that barium enema and colonoscopic examination are hazardous during the acute phase of diverticulitis.[5–7] The increase in intraluminal pressure during colonoscopic examination can lead to the rupture of an inflamed diverticulum and exacerbate perforation. Therefore, barium enema and colonoscopic examination are not routinely performed in patients in the acute phase of diverticulitis. A diagnosis of diverticulitis-related complications is usually made after other conditions have been ruled out.

Chronic diverticulitis, with its associated inflammation and fibrosis, compromises the blood supply and renders it susceptible to invasion by colonic bacteria. When the intraluminal pressure increased in the colon of the patient described, a perforation resulted in 3 episodes of abscess in the left renal fossa. Although fecaloid fluid rather than a gas-containing track on CT scan is a diagnostic sign of renocolic fistula,[8,9] no pus was found in the fecal material of our ADPKD patient. A perforated diverticulum was confirmed by fistulography.

In conclusion, although our ESRD–ADPKD patient developed diverticulitis-related complications (i.e. retroperitoneal abscess formation), this type of complication is not common. However, it should be kept in mind as a differential diagnosis of retroperitoneal abscess in ADPKD patients.

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