Dear Sir,

Peritonitis is a common complication in patients with end-stage renal disease treated by continuous ambulatory peritoneal dialysis (CAPD). It is usually caused by poor technique, exit-site infection [1, 2], tunnel infection [3, 4], perforation of hollow viscera [5], diverticulitis [6, 7], colitis [8], or cholecystitis [9], etc. It is usually easily treated by effective and adequate antibiotics in most cases. However, it becomes complicated and protracted in some cases if the uncommon abdominal abscesses cannot be found and eradicated completely [10]. However, repeated episodes of peritonitis attributed to isolated lesser sac abscesses have never been reported. Herein, we report a rare case of isolated lesser sac abscess formation following repeated episodes of peritonitis in a CAPD patient. The clinical condition improved dramatically after ultrasound-guided aspiration of the lesser sac abscess.

A 38-year-old woman was under CAPD therapy for 57 months. She was admitted to hospital because of epigastric pain developed and progressed to diffuse abdominal pain in the morning. It was followed by turbid dialysate effluent. The white cell count (WBC) of the effluent was 480/cm³. The cloudy effluent became clear and WBC decreased to 1/mm³ on the 4th day. The antibiotic therapy was administered for 2 weeks. Two months later, similar symptoms and peritonitis recurred. The WBC of the effluent was 2,900/mm³. The culture of the effluent also showed CNS, which was also sensitive to cefazolin and gentamicin. The three flushings and antibiotics as above were given for 2 weeks, even though the cloudy effluent became clear and WBC declined to 1/mm³ on the second day. However, a 3rd episode of peritonitis relapsed 1 month later. Since then, the frequency of relapsing peritonitis has increased and the interval between peritonitis episodes has been shorter even under persistent antibiotic therapy (fig. 1). The symptoms of each episode presented similarly. The pathogen of each episode of peritonitis was CNS with the same bacterial sensitivity test.

On physical examination, there was no erythema or discharge from the exit site, no evidence of acute tunnel infection, no rebound pain, and no Murphy’s sign. The WBC was 6,200/mm³ with 62% neutrophils. The hematocrit was 32%. Platelet count was 283,000/mm³. Serum biochemistry showed calcium 8.9 mg/dl (reference range: 8.4–10.6), inorganic phosphate 4.0 mg/dl (2.1–4.7), AST 20 U/l (5–45), ALT 3 U/l (0–40), amylase 221 U/l (<190), lipase 178 U/l (<190). Computed tomography (CT) of the whole abdomen before drainage of dialysate showed no evidence of diverticulitis, space-occupying lesions or enlarged lymph nodes. The upper gastrointestinal (UGI) and small intestine series did not show peptic ulcer or any abnormality. The subsequent Tc99m-labeled WBC scanning for detection of intra-abdominal abscess showed a negative result. Abdominal sonography after dialysate drained out revealed fluid accumulation in the lesser sac. Because there were 4 other episodes of turbid effluents happening under the antibiotic coverage after the above examinations, a 2nd sonography of the whole abdomen after dialysate drained out was arranged which also revealed fluid accumulation, sized 3 × 2 × 1.5 cm in the lesser sac (fig. 2). At this time, ultrasound-guided aspiration of the lesser sac fluid was done with the finding of 15 cm³ of turbid aspirate. The aspirated fluid culture was positive for CNS. The bacterial sensitivity test was the same as before. Eight days later, follow-up CT of the whole abdomen after the dialysate drained out showed no evidence of focal fluid accu-
mulation in the lesser sac. The antibiotics were discontinued 2 weeks later. In the following 2 years, there was no more peritonitis.

In this case, the frequently relapsing peritonitis indicated that there was an occult infective source not related to inadequate or inappropriate therapy. The culture of aspirate fluid from the lesser sac showed CNS with the same bacterial sensitivity test as previous dialysate culture. There was no more peritonitis after the pus was aspirated from the lesser sac. So the sonogram findings and clinical course support that the infectious source of relapsing peritonitis came from the lesser sac abscess.

In this case, the 1st abdominal CT did not find any focal fluid accumulation in the lesser sac. This might be because the dialysate fluid was not drained out during the CT examination. In the study of Twardowski et al. [11], they mentioned that approximate fluid contents in the lesser sac were 1–3\% (20 cm$^3$ for a 2-liter dialysate) before drainage as appraised in the supine position. Usually, there is no more fluid accumulation in the lesser sac after drainage in both the supine and the erect positions [11]. Therefore, the repeated abdominal sonograms were performed after dialysate drainage and showed fluid collection in the lesser sac. Dialysate drained out before CT or sonogram examination was important for the diagnosis of abdominal and retroperitoneal abscesses.

The characteristic and consistent epigastric pain progressive to diffuse abdominal pain in the morning in each episode of peritonitis may be a helpful clue of lesser sac abscesses. However, it may need further cases for evaluation.

Singh and Wadhwa [12] reported a mortality CAPD case with concurrence of protracted peritonitis, pancreatitis, and infected pancreatic pseudocyst or lesser sac abscess. They addressed two proposed sequences of events: (1) pancreatitis as the initial event,
then pseudocyst formation, infected pseudocyst, overt peritonitis, and (2) incomplete resolution of peritonitis as the initial event, then lesser sac abscess formation followed by overt peritonitis and acute pancreatitis. However, there was no evidence of pancreatitis in our case because of no significant elevation of serum amylase or lipase. Abdominal CT and sonogram also did not show any evidence of pancreatitis. This means that lesser sac abscess can cause overt peritonitis without pancreatitis.

In conclusion, when there is early-morning epigastric pain followed by turbid dialysate effluent in CAPD patients, lesser sac abscess formation should be included in the differential diagnosis of abdominal events in CAPD patients. Ultrasonography or CT scan of the abdomen should be performed after the dialysate is drained out. In addition to adequate and effective antibiotic therapy, aspiration of the lesser sac abscess should be considered for complete eradication of peritonitis.

Acknowledgements
This work was supported by grants from the National Science Council of Taiwan (NSC 89-2314-Bo75-153).

References

Announcement

3rd International Congress on Uremia Research

The 3rd International Congress on Uremia Research will take place in Taormina, Sicily, on October 2–4, 2003. Deadline for submission of abstracts is May 2, 2003. For further information, please contact Prof. Guido Bellinghieri, Viale Regina Margherita, 69, 1–98100 Messina (Italy), Fax: 39 090 36 36 26.