Laparoscopic therapy in a CAPD patient with perforated appendicitis without removal of the peritoneal catheter

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Introduction

Peritonitis is the most common complication in patients receiving chronic ambulatory peritoneal dialysis (CAPD). It is normally readily diagnosed and successfully treated conservatively without serious complications. However, when peritonitis is resistant to standard intraperitoneal antibiotic therapy, underlying intra-abdominal pathology should be suspected [1]. Of all peritonitis in CAPD patients, 6–9% is caused by (multiple) enteric micro-organisms suggestive of gastrointestinal perforation [2]. It is often necessary to perform surgical exploration to confirm such a diagnosis [2,3]. A laparoscopic approach with these patients is gaining popularity as an alternative to open surgery. Finding a bowel perforation often means conversion to laparotomy and (long-term) cessation of PD because the CAPD catheter is removed. The idea behind this strategy is that foreign bodies should always be removed from infected areas.

We present a case of a perforated appendicitis in a CAPD patient, diagnosed and treated laparoscopically, without loss of the peritoneal catheter.

Case

A 42-year-old woman was admitted to our hospital. Her history revealed chronic renal failure of unknown origin for > 15 years. CAPD treatment was started in 1995. Several episodes of CAPD-related peritonitis due to Staphylococcus aureus occurred since, all successfully treated with antibiotics. She now presented with abdominal pain and cloudiness of peritoneal fluid (white blood cell count: 9.0 × 10⁹/l). There was diffuse abdominal tenderness. Her temperature was 37.8°C. We suspected CAPD-related peritonitis and, after sending the bag for culture, we started treatment with antibiotics according to our PD peritonitis protocol: cefazolin and gentamicin, both intraperitoneally. The culture revealed a Bacteroides species. Because it was a monocolony without Gram-negative rods, we switched to amoxicillin and clavulanic acid. Our patient clinically improved and was discharged after 5 days. The same evening, however, she had to be re-admitted because of severe abdominal pain with nausea and vomiting. There was peritoneal irritation with tenderness on palpation and release of the right side of the abdomen. Her temperature was 38.2°C. After culturing the dialysate, we performed laparoscopy (the second culture later showed no growth of micro-organisms, probably because it was taken under antibiotic treatment). We saw a severely inflamed and perforated appendix completely covered with fibrinous tissue. There was pus in the abdominal cavity. A laparoscopic appendectomy was performed, leaving the CAPD catheter in place after extensive abdominal lavage. Post-operative intravenous antibiotic therapy was given (meropenem). The patient was temporarily switched to haemodialysis on a jugular catheter. Post-operative recovery was without complications, and she was discharged 11 days after surgery. In her haemodialysis period (3 weeks), the peritoneal catheter was flushed twice weekly with 100 cm³ saline. Three weeks later, our patient resumed CAPD without problems, especially no drainage problems.

Pathological examination of the appendix taken during laparoscopy revealed a severely inflamed appendix with multifocal necrosis of the entire wall.

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Discussion

The clinical presentation of acute abdominal events in CAPD patients does not always correspond with the severity of the peritonitis, because localizing symptoms are often absent and because intraperitoneal antibiotics can improve the clinical condition of these patients [3,4]. Even in patients that do not receive CAPD, the diagnosis of intra-abdominal pathology can be very difficult; early laparoscopy is recommended to make the diagnosis certain, with or without subsequent therapy [5].

The advantages of laparoscopy in general are well known: low invasiveness [6], less post-operative pain [1], low incidence of post-operative ventilatory disorders [1,6] and a quicker recovery and shorter stay in the hospital [6]. This leads to a more rapid recovery of social and professional activities [1]. It causes minor scarring, which improves cosmesis but also reduces the risk of disruption of the peritoneum or abdominal wall, which may lead to intra-abdominal adhesions [6]. Laparoscopy allows early resumption of PD after surgery [1,6], hence minimizing the need for haemodialysis. After laparotomy, the early resumption of PD has been associated with poor wound healing, higher rates of wound infection and the leakage of dialysate through the post-operative wound. In CAPD patients, the presence of a peritoneal catheter allows the creation of a pneumoperitoneum completely non-invasively, reducing the risk of injuring intra-abdominal organs [1].

Laparoscopy could be considered to be a first-line procedure for any CAPD patient requiring abdominal surgery [1]. It serves diagnostic and therapeutic purposes. The laparoscopic route is often used for elective or acute cholecystectomy and acute appendectomy in CAPD patients [1,3,6]. However, we could not find any report of laparoscopic appendectomy in patients where the appendicitis was complicated by abscess formation and perforation. Of course, the surgeons clinical judgement will always be decisive in the choice of treatment.

Despite all the advantages the laparoscopic approach offers CAPD patients, finding a bowel perforation often means removal of the CAPD catheter (with or without subsequent laparotomy) [1,4,7,8]. The idea behind this is that the catheter serves as a foreign body which maintains the infection and should therefore be removed.

In contrast to this is the new hypothesis that the positive effect of catheter removal in faecal peritonitis is caused by the interruption of PD and mostly the discontinuation of the bio-incompatible glucose-containing dialysis fluid, and not necessarily by the catheter removal itself.

Conservative medical management of CAPD patients after the diagnosis of vescicular perforation has been advocated or successfully attempted before (intermittent PD, discontinuation of PD without catheter removal, or catheter removal with transfer to haemodialysis without surgical intervention) [9]. In the elderly, with a higher incidence of diverticulosis, microperforations of the colon are the most common (65.5%) cause of faecal peritonitis in CAPD patients. These microperforations have frequently led to negative laparotomy. These patients can often be treated conservatively with interruption of PD and intravenous antibiotics. After an X-ray of the colon has been made, showing no leakage of contrast fluid, the PD can be restarted. The catheter could be left in place in this situation.

To the best of our knowledge, there has been no report of perforated appendicitis in a CAPD patient, which was both diagnosed and treated laparoscopically, without removal of the catheter. We find this case report is noteworthy for two reasons. First, we underline the fact that laparoscopic treatment of complicated appendicitis in a CAPD patient can be a safe procedure. This is in accordance with recent literature concerning laparoscopic appendectomy, though not in CAPD patients. Secondly, we show that leaving the catheter in place after laparoscopy in CAPD patients with peritonitis caused by bowel perforation could be a safe procedure, provided that extensive abdominal lavage is performed and specific antibiotic therapy is given immediately after surgery. All can contribute to a quicker resumption of PD after surgery in CAPD patients.

Conflict of interest statement. None declared.

References


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