Laparoscopic-aided diagnosis of recurrent peritonitis in a patient on CAPD

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Introduction

Though peritonitis is a significant problem in managing patients on continuous ambulatory peritoneal dialysis (CAPD), it is normally readily diagnosed and successfully treated. However, when peritonitis is resistant to standard intraperitoneal antibiotic therapy, an underlying intra-abdominal pathology may be present. Establishing or refuting such a diagnosis can be difficult. We present a CAPD patient with peritonitis in whom laparoscopy enabled the correct diagnosis and treatment to be carried out.

Case report

A 31-year-old female veterinary surgeon, on CAPD for 10 years, presented with a 5-day history of clinical peritonitis. Unfortunately, without obtaining any samples for culture, she had self-medicated with oral cefuroxime, and only attended for review when her symptoms failed to settle. The patient was febrile, with diffuse lower abdominal tenderness. There were no localizing features. CAPD dialysate was turbid, with leukocyte count of $0.9 \times 10^9/l$, predominantly neutrophils. Her peripheral leukocyte count was $12.4 \times 10^9/l$, C reactive protein was 256 mg/l. Blood and peritoneal fluid cultures were negative. The patient was treated with intraperitoneal vancomycin (60 mg) and netilmicin (20 mg), 6-hourly for 1 week, with a rapid improvement in her symptoms. The patient had a clinical recurrence 4 days after discontinuing therapy and received a further 10-day course of intraperitoneal vancomycin and netilmicin. A barium enema, abdominal ultrasound, and abdominal CT were normal. Following a further relapse, after completing her second course of intraperitoneal antibiotics, we performed a diagnostic laparoscopy, with the intention of proceeding to peritoneal catheter removal, if no alternative source of intra-abdominal sepsis could be found.

At laparoscopy a mildly inflamed appendix was visualized and a standard laparoscopic appendectomy was performed [1]. Peritoneal dialysis was recommenced 36 h after surgery and was well tolerated. The patient went on to make an uneventful recovery and was discharged from hospital 3 days later having had a complete resolution of her abdominal pain and tenderness. Apart from some mild initial blood staining, her dialysate fluid became and remained clear. Pathological examination revealed evidence of resolving inflammation of the appendix.

Discussion

Peritonitis due to intraperitoneal pathology in the CAPD patient is rare, with a reported incidence of one case per thousand months of treatment [2]. However, the incidence of secondary peritonitis can be expected to increase, as increasing numbers of elderly patients with multiple pathologies are accepted onto renal replacement programmes. The clinical presentation is usually similar to that of primary CAPD peritonitis, with the result that the diagnosis is only suspected when there is failure of standard therapy or the patients condition deteriorates.

Acute appendicitis has only rarely been described as an underlying cause of peritonitis in patients on CAPD [3–5]. Its presentation is frequently atypical, with focal left iliac fossa signs either being absent or only slowly evolving. This poor localization of findings may partly be the result of the ongoing lavage of the peritonium interfering with the adhesion of the greater omentum to the inflamed appendix [3]. Furthermore, the use of intraperitoneal antibiotics for the treatment of a presumed episode of primary peritonitis may serve to conceal but not to fully eradicate the underlying source of inflammation.

A considerable delay therefore often occurs before the correct diagnosis of a secondary peritonitis is made, a delay of up to 27 days in one review [6]. This contributes to the high mortality seen in this condition, which ranges from 40% to 60% [6,7]. In addition, the presence of persistent intra-abdominal inflammation may result in peritoneal scarring and secondary adhe-
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sion formation, thus endangering the long-term viability of peritoneal dialysis [8].

Direct visualization of the abdominal contents is very effective in establishing a diagnosis of secondary peritonitis, but traditionally has required a laparotomy, with the resultant inevitable disruption of the peritoneal membrane and subsequent need for temporary cessation of peritoneal dialysis. Nephrologists, aware of the relative rarity of secondary peritonitis are usually slow to proceed to laparotomy if at all avoidable, and thus laparotomy is often a diagnostic measure of last resort, to the detriment of the occasional patient whose peritonitis is indeed secondary to intra-abdominal pathology. The development of laparoscopic surgical techniques, however, provides an effective alternative in this situation. Laparoscopy, from the CAPD viewpoint, offers the significant advantage of minimal interference to the peritoneal membrane, with dialysis in many cases being able to recommence within 24 h [9]. Laparoscopy has been successfully used in peritoneal dialysis patients requiring catheter salvage [9] and elective cholecystectomy [9,10]. In the case discussed above, laparoscopy allowed not only the underlying cause to be identified but also permitted definitive therapy. While the success of laparoscopic appendectomy is well established [1], to the best of our knowledge our case is the first report of a laparoscopic appendectomy in a patient undergoing treatment with CAPD.

As laparoscopy allows the examination of the peritoneum, without the sacrifice of peritoneal dialysis, we suggest that early laparoscopy should be performed in patients with unresolved peritonitis, in whom secondary peritonitis is an active consideration. Such a strategy would facilitate the earlier diagnosis of intra-abdominal pathology, and hopefully result in an improvement in the eventual outcome. It would also help safeguard the viability of peritoneal dialysis, both in the short term by preventing unnecessary peritoneal disruption, and in the long term by preventing scarring that can result from persistent peritonitis.

References


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