CASE REPORT

Erosion of a Tenckhoff catheter to the sigmoid colon: an uncommon delayed complication

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Abstract Continuous ambulatory peritoneal dialysis is one of the most commonly used therapies for patients with impaired renal function. Most frequent complications directly related to the catheter usually present within the first weeks, and range from catheter dysfunction to dialysis-associated peritonitis; bowel perforation while placing the catheter is uncommon, and it is usually assessed in the same surgical event. There are, however, delayed complications, and one of the least frequently described is erosion of the catheter into the bowel. We present the case of a 65-year-old man, who shows up at the emergency room referring to “acute diarrhea” associated with his dialysis, it is quickly diagnosed as a bowel perforation and underwent emergency surgery. During the operation we found adhesions compromising small bowel and sigmoid colon, the far end of the dialysis catheter inside the sigmoid colon, with no signs of colonic leakage to the peritoneal space. We removed the dialysis catheter, resected the fibrous borders of the site of insertion and performed a primary closure. The patient evolved satisfactorily and was subsequently discharged to continue with hemodialysis for renal substitution therapy.

Keywords Peritoneal dialysis catheter · Tenckhoff catheter · Colon perforation · Sigmoid perforation

Introduction

In Mexico, continuous ambulatory peritoneal dialysis (CAPD) is one of the most used substitution therapies for end-stage renal failure, approximately two thirds of the renal dysfunction patients undergo peritoneal dialysis, either ambulatory or continuous ambulatory, while only a third is on a hemodialysis program [1]. This is either due to some advantages such as a more liberal dietary intake of protein, sodium and potassium, and hemodialysis’ requirement of anticoagulation, not present in peritoneal dialysis [2].

While dialysis catheter insertion is a practically everyday-surgical procedure, there are complications associated with its surgical insertion, early complications include infection, hematoma, pericatheter leakage and peritonitis, most of which are associated with patient comorbidities such as uncontrolled diabetes mellitus, and poor nutritional status, other factors associated are ongoing sepsis and glomerulonephritis; late complications most frequently include peritonitis. There are, however, few reports that include bowel and bladder perforation during surgical procedure, and even fewer reporting such perforations months or even years after catheter placement [3, 4].

Case report

We report the case of a 65-year-old man who comes to the emergency room referring diarrhea, starting a week ago. His medical history includes systemic arterial hypertension under treatment, late-stage renal disease associated with bilateral hydronephrosis secondary to prostatic hypertrophy; on ambulatory peritoneal dialysis starting 2 years ago, having undergone at least four surgical placements (due to malfunction) last one 8 months ago. He comes in a highly

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Fig. 1 We see the distal part of the Tenckhoff pigtail catheter inside the sigmoid colon (*arrow*). Fibrotic tissue surrounds the site of catheter insertion

dehydrated state, asthenic, adynamic, not referring fever or any other symptoms. He is quickly managed in the emergency service, in which he is intravenously rehydrated and peritoneal dialysis is re-started, during which it is noticed that there is a rectal discharge of the peritoneal dialysis solution.

The patient underwent surgery almost immediately, given the high risk for a further complication. A laparotomy was performed in which we found a double-cuffed, pigtail-end catheter, with the curl end fully inside the sigmoid colon (Fig. 1), adhesions included small bowel, sigmoid colon and omentum, and there was fibrotic tissue surrounding the catheter (Fig. 2). Adhesiolysis was performed, the catheter was removed and the site of insertion into the colon was resected, then a two-layer primary closure was performed. The patient evolved satisfactorily, was discharged and subsequently admitted for hemodialysis.

Discussion

Reports of peritoneal catheter perforations into bowel are rare. Most of the perforations occur in dormant catheters. While interrogating the patient we found out that his

Fig. 2 We see the involvement of small intestine (SI) and sigmoid colon (SC) conjoined by fibrotic tissue (*arrow*) in the catheter's path

dialysis regimens were quite irregular, and thus might be one of the risk factors involved, yet our patient could not clearly state how much time the catheter had remained unused; the majority of the cases reported occur 1.6–48 months after catheter use has ceased [5].

Our patient underwent 4 surgeries involving a peritoneal dialysis catheter in a 2-year lapse; the last surgery was performed about 8 months prior the perforation, and there were apparently no early complications associated with the procedure. There are no reports regarding the number of catheter placement surgeries or their association with late complications. Other risk factors with known association with bowel perforation include diverticular disease or any other gastrointestinal pathology such as amyloidosis [6].

Clinical presentation is variable, with the literature reporting protrusion of the catheter through the anus. In this case, the only clinical feature shown was watery diarrhea during fluid instillation. Other clinical features reported include signs of peritonitis or sepsis [5]. Although some patients may remain asymptomatic [7].

Treatment options range from a conservative approach that includes the catheter removal only; to a laparotomy with colonic resection and anastomosis. In our patient we determined there was no need for a more invasive procedure, so the catheter was removed, the fibrotic borders of the insertion site were resected, and primary closure was performed. There are reports which say that even just removing the catheter without primary closure is enough treatment in patients with no signs of sepsis or peritonitis [5] and patients evolve with favorable outcome.

Our patient evolved with no further complications and was subsequently discharged home.

Conclusion

While most of the time, a well-placed peritoneal dialysis catheter poses no risk for intraperitoneal organs, sometimes, under certain circumstances there are some delayed complications of such catheters, in this case, we see a patient that had undergone at least 4 previous catheter-related surgeries, the last one 8 months before the finding of perforation, with no other colonic disease findings. Given the fact that peritoneal dialysis catheters are intended for long-to-permanent stay in the peritoneal space, they are not innocuous and still pose a threat for intraabdominal organs.

Compliance with ethical standards

Conflict of interest Authors declare there is no conflict of interest regarding this case.

Funding This case did not require funding or financing.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee at which the studies were conducted, and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this article.

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