Netherlands
The Journal of Medicine

CAPD peritonitis after colonoscopy: follow the guidelines

W. Poortvliet[1], H.P.M. Selten[1], M.H.M.Raasveld[2], M. Klemt-Kropp[1*]

Departments of [1]Internal Medicine and Gastroenterology, Medical Centre, Alkmaar, the Netherlands, [2]Department of Internal Medicine, Nephrology, Westfriesgasthuis, Hoorn, the Netherlands, *corresponding author: tel.: +31- (0)72-548 44 44, fax: +31 (0)72-548 21 65, e-mail: m.klemt-kropp@mca.nl

ABSTRACT

We present two cases of peritonitis shortly after endoscopic examination of the large bowel with polypectomy in patients on continuous ambulant peritoneal dialysis (CAPD) despite the standard preventive measure to drain the dialysate from the abdomen prior to the procedure. We have reviewed the current literature on this topic. These cases demonstrate that the administration of prophylactic broad-spectrum antibiotics next to the drainage of the abdomen prior to colonoscopy in CAPD patients should be considered as recommended in the International Society for Peritoneal Dialysis (ISPD) guidelines 2005.

KEYWORDS

Peritonitis, CAPD, colonoscopy, prophylactic antibiotics

INTRODUCTION

Peritonitis in CAPD patients after colonoscopy is a known complication. A retrospective study from Hong Kong revealed an average risk of peritonitis after colonoscopy of 6.3% in 77 CAPD patients after 97 endoscopic procedures.[1] Colonic biopsy or other interventions such as polypectomies apparently did not increase the risk of peritonitis.[2]

After colonoscopy in CAPD patients it is thought that bacteria may translocate to mesenteric lymph nodes, then to portal circulation resulting eventually in systemic bacteraemia with peritoneal seeding. In CAPD patients the glucose-containing fluid in the peritoneal cavity impairs the local immune response by diluting cytokines and reducing the macrophage level. The function of mesothelial surface and cells, another local host defence system, may be altered due to presence of dialysis solution. Further, activated cytokines and macrophages are constantly removed by daily changes of the dialysate.[3] All these factors may facilitate bacterial growth in the peritoneal cavity even with a small inoculum of bacteria.

CASE REPORTS

A colonoscopy was performed at our outpatient clinic in a 67-year-old female patient with chronic end-stage renal failure maintained on continuous ambulant peritoneal dialysis (CAPD) because of recurrent rectal bleeding, frequent loose stools and faecal incontinence since a few months. She has been undergoing CAPD since November 2006. She had one episode of a culture-negative CAPD peritonitis two years ago.

The patient drained her abdomen shortly before scheduled endoscopy. No prophylactic antibiotics were given. During endoscopy diverticula were seen in the sigmoid colon. A sessile polyp in the mid-transverse colon was removed with a snare after lifting the lesion with 6 cc adrenaline/saline. Histology revealed a serrated adenoma. The procedure was uneventful and the patient left hospital a few hours after the procedure.

Two days after colonoscopy the patient was readmitted because of abdominal discomfort and a cloudy dialysate, suggestive of CAPD peritonitis. On admission we saw an obese female, not in distress. There was no abdominal distension nor rebound tenderness. On X-ray there was no evidence of perforation. Laboratory analysis at admission showed an elevated C-reactive protein of 37 mg/l with a mild leucocytosis of 10.7 X 10^9/l with a leftward shift. The dialysate contained 5500 leucocytes/mm^3 with 80% neutrophiles.

The diagnosis of CAPD peritonitis after colonoscopy with polypectomy was evident. After obtaining cultures therapy was started with a single-dose vancomycine 2 g and ceftazidime 1 g intraperitoneally. Treatment was continued with ceftazidime intraperitoneally once daily for a period of three weeks. The diagnosis was confirmed by a positive dialysate culture for *Escherichia coli*. The patient recovered completely.

The second patient from a district hospital, a 73-year-old man, on CAPD for years due to end-stage renal failure without any prior peritonitis, underwent a colonoscopy for the analysis of overt rectal bleeding. A large caecal polyp was removed with a snare. Two days later the patient was readmitted with abdominal pain and a cloudy dialysate. On admission the patient was not in distress and no evidence of perforation was seen on X-ray. Laboratory analysis revealed an elevation of C-reactive protein (58 mg/l) and a mild leucocytosis (10.5 x 10^9/l). The dialysate contained 11,467 leucocytes per mm^3. This patient was treated immediately with vancomycin and gentamicin intraperitoneally according to the local protocol and left hospital after six days, fully recovered. This treatment was continued for two weeks. The pre-emptive diagnosis of CAPD peritonitis after colonoscopy was confirmed by a positive dialysate culture for *Escherichia coli*, *Klebsiella oxytocea* and *Enterococcacea*.

DISCUSSION

In the 2005 guidelines for CAPD peritonitis of the International Society for Peritoneal Dialysis (ISPD) drainage of the peritoneal cavity and antibiotic prophylaxis with ampicilline, an aminoglycoside with or without metronidazole intravenously prior to colonoscopy is recommended. However, due to the lack of prospective trials there is scarce evidence to support this recommendation. Therefore, this guideline is not widely accepted and implemented. In the current guidelines of the Dutch Federation of Nephrology (NfN) the use of prophylactic antibiotics additionally to drainage of the dialysate before colonoscopy is recommended.[4] However it is mentioned that this is currently not daily practice in the Netherlands. Furthermore, these nephrology guidelines are widely unknown among gastroenterologists who are responsible for the planning and performance of endoscopic procedures. In the current guidelines of the American Society for Gastrointestinal Endoscopy (ASGE),[5] the British Society of Gastroenterology (BSG)[6] and the European Society of Gastrointestinal Endoscopy (ESGE),[7] the risk of peritonitis in PD patients is not mentioned. No advice is given about antibiotic prophylaxis in these patients prior to colonoscopy.

In 2009, two colonoscopies in 32 CAPD patients were performed in our hospital with one episode of peritonitis. Although peritonitis after colonoscopy in CAPD patients might be a rare event, it may lead to serious complications in the short and long term and even to death.[8] Recurrent peritonitis remains the primary reason to switch from PD to haemodialysis.[9] In distinction, the prophylactic use of a single-dose antibiotic prior to colonoscopy has almost no risks.

The implementation of the ISPD guidelines should be considered in every endoscopy unit performing colonoscopies in CAPD patients. We strongly recommend the use of antibiotic prophylaxis next to drainage of the peritoneal cavity prior to colonoscopy in CAPD patients as advised in the ISPD guidelines. A clear, interdisciplinary communication over these patients between gastroenterologist and nephrologist is important to prevent this serious complication.

CONCLUSION

CAPD peritonitis after colonoscopy is not a rare event. It may lead to serious morbidity. With our cases we have demonstrated that drainage of the peritoneal cavity prior to endoscopy is not sufficient to prevent infectious complications. We therefore recommend implementing the current ISPD guidelines to use additional antibiotics. The gastroenterologist should be familiar with this guideline.

REFERENCES

1. Piraino B, et al. Peritoneal dialysis-related infections recommendation: 2005 update. Perit Dial Int. 2005;25(2):107-31.
2. Yip T, Tse KC, Lam MF, Cheng SW, Lui SL, Tang S, et al. Risks and outcomes of peritonitis after flexible colonoscopy in CAPD patients. Perit Dial Int. 2007;27(5):560-4.
3. Brulez HF, Verbrugh HA. First-line defense mechanisms in the peritoneal cavity during peritoneal dialysis. Perit Dial Int. 1995;15(7 Suppl):S24-33.
4. Richtlijnen Peritoneale Dialyse gerelateerde infectie. Nederlandse Federatie voor Nefrologie 2007. http://www.nefro.nl/uploads/6y/mb/6ymb3ASlqwnBj7rGmYMtNw/Richtlijn-PD-gerelateerde-infecties.2007.pdf
5. Antibiotic prophylaxis for GI endoscopy. ASGE guidelines. Gastrointest Endosc. 2008;67:791-8.
6. Allison MC, Sandoe JAT, Tighe R, Simpson IA, Hall RJ, Elliot TSJ. Antibiotic prophylaxis in gastrointestinal endoscopy. Gut. 2009;58: 869-80.
7. European Society for Gastrointestinal Endoscopy. Guideline: Antibiotic prophylaxis for gastrointestinal endoscopy 1998. http://www.esge.com/assets/downloads/pdfs/guidelines/antibiotic_prolax.pdf.
8. Perez Fontan M, et al. Peritonitis-related mortality in patients undergoing chronic peritoneal dialysis. Perit Dial Int. 2005;25(3):274-84.
9. Voinescu CG, Khanna R. Peritonitis in peritoneal dialysis. Int J Artif Organs. 2002;25(4):249-60.