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*Case report*

## Development of Acute Peritonitis after Gynecological Procedure in a Peritoneal Dialysis Patient

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### Abstract

Although the majority of peritonitis cases in peritoneal (PD) dialysis patients are caused by gram-positive cocci, streptococcus agalactiae, a gram-positive group B  $\beta$  haemolytic streptococcus, may rarely be found in this group of patients. We present a case of acute peritonitis caused by streptococcus agalactiae with bacteremia and septic shock occurring after a curettage indicated because of gynecologic bleeding. The patient did not receive antimicrobial prophylaxis since the gynecologist considered this case as a "routine" procedure without the need to administer antibiotics. Our case demonstrate that small procedures may cause great problems and therefore one should always give priority to individual approach regardless of the protocol for "routine" surgery, especially if there are no indications for the emergency procedure.

**Key words:** bacteremia, peritoneal dialysis, peritonitis, streptococcus agalactiae, gynecological procedure

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### Introduction

Peritonitis in patients on peritoneal dialysis (PD) may be challenging in many ways; a small initial problem may sometimes cause serious complications. Approximately 18% of infections causing mortality in PD patients are a result of peritonitis. Additionally, peritonitis and its consequences are major reasons for shifting of patients from the PD modality to hemodialysis [1]. Peritonitis as a result of the surgical procedure has been described as a complication of surgery in genitourinary tract, gynecological and urological procedures (curettage or endometrial biopsy, conization, cystoscopic procedures) but also in the gastrointestinal tract (rectoscopy, colonoscopy with polypectomy, enema) [2-8]. Careful preparation of the patient may avoid compromising complications including infection, perforation, loss of the method and death.

### Case report

A 36-year-old female patient has been suffering from

type 1 diabetes since the age of 2 years, with multiple complications including diabetic nephropathy. She developed end-stage renal disease (ESRD) and was treated with CAPD over 5 years. Several months prior to admission she had noticed prolonged gynecologic bleeding, and a gynecologist indicated a curettage. After the appropriate preparation (72 hours prior to gynecologic surgery the patient had an empty abdomen without dialysis fluid and was treated with hemodialysis because she also had an AV fistula), the curettage was performed under general anesthesia. Following this procedure she was transferred to the Department of nephrology for further observation. That same evening she developed a high fever (38.8°C), with intensive pain in the lower abdominal quadrants, vomiting, poor general condition and hypotension. Laboratory tests found the following septic blood count: white blood cells (WBCs)  $27 \times 10^9/L$ ,  $39 \times 10^9/L$ , differential WBCs showed neutrophils-31% undivided, and 50% divided neutrophils, lymphocytes 2.0%, monocytes 3.0%, metamyelocytes 6%, C-reactive protein (CRP) 330 mg/L, procalcitonin 61.63 ng/mL, with drop in the red blood count ( $E1.98 \times 10^{12}/L$ ,  $2.49 \times 10^{12}/L$ , Hb 58; 60 g/L) and an increase in peritoneal leukocytes ( $103.30 \times 10^6/L$ ). Due to the suspected intra-abdominal perforation a native abdominal radiography was done which showed no pathological findings. Abdominal multi-sliced computerized tomography also showed no pathological substrates, both natively and after contrast application. We consulted a gynecologist in terms of developing postoperative complications, but nothing abnormal was found. In the meantime, the patient received a PHD after obtained curettage findings suggesting chronic cervicitis. The patient continued receiving HD treatment, but due to prolonged hypotension and poor general condition thrombosis of AVF occurred, thus HD was performed via temporary central venous catheter. Since she had a CAPD catheter, we had a window view into the abdominal cavity. Peritoneal lavage with 300 ml of dialysis fluid was performed. The obtained content was blurry, and the samples were sent for biochemical and microbiological analyses. Direct microscopy of the lavage showed Gram-positive cocci for which empirical Vancomycin 30 mg/kg

body weight was applied intraperitoneally (IP) considering her clinical condition. Due to the possibility of intraperitoneal perforation, Clindamycin and Ciprofloxacin were introduced, but after arrival of microbial pathogens culture they were discontinued. The cultivation on solid medium, after 3 days, showed the following microbiological findings: beta-hemolytic streptococcus group B with good sensitivity to Meropenem, Ceftriaxone, Vancomycin, Ampicillin, Penicillin. Ampicillin IP 125mg/L in each PD exchange was applied for the following 3 weeks, with fluconazole therapy for oral prophylaxis of fungal peritonitis, and heparin intraperitoneally until the dialysis fluid was completely clear (according to the ISPD Guidelines/recommendations) [5]. During hospitalization anemia was corrected with transfusion of washed red blood cells, and later with erythropoietin. Before the patient was discharged from the hospital new AV fistulas were formed in the right cubital region, and she continued with bimodal treatment including CAPD and hemodialysis. Now she is in the active status for multi-organ transplantation (kidney and pancreas). The assumption is that the patient, prior to the procedure had received a prophylactic antibiotic-Cephazolin, which is a common surgical protocol. Afterwards, according to the gynecologist's opinion this case was treated as a "routine" surgery, and antibiotics were not given.

## Discussion

The patient had a complication following a gynecologic procedure. Microbiologically isolated pathogen, streptococcus agalactiae, is a normal inhabitant of the gynecologic vaginal tract and peritoneal cavity, and it is transmitted with micro-perforating lesion. Theoretically, a hematogenic transmission could be the cause as well, due to the fact that it was isolated in hemoculture, and transmission into blood flow was possible through a lesion in the small blood vessels [2]. It is also known that the inflammatory processes and pathogens from the vagina and cervix may spread into the peritoneal cavity over the oviduct. Uremic patients have reduced resistance to infection, atrophic mucosa, the organ walls change in the inflammation, and the procedure cannot be done in the sterile environment [3,6]. Since beta-hemolytic group B streptococci are common inhabitants of the vagina, the most ideal prophylaxis for gynecologic procedure is administration of Ampicillin. However, it

is unclear whether lavage with appropriate antiseptic in pre-procedural preparation would be helpful.

Our case demonstrates that an individual approach to each patient with careful preparation for surgical procedures as well as antimicrobial prophylaxis should be applied.

## Conclusions

Despite all technical improvements in the PD procedure peritonitis remains a major problem of this renal replacement modality. Our case indicates that small procedures may cause great problems and therefore one should always give priority to individual approach regardless of the protocol for "routine" surgery, especially if there are no indications for emergency procedure. Certainly this requires the nephrologist's personal contact with other professions due to the specificity of the patients with ESRD.

*Conflict of interest statement.* None declared.

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