
Case report

Acute Peritonitis Caused by *Propionibacterium Acnes* in a Peritoneal Dialysis Patient

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Abstract

Propionibacterium acnes is a gram-positive human skin commensal that is involved in the pathogenesis of acne and prefers anaerobic growth conditions. It has been considered as a low virulence pathogen in different clinical conditions. We present the case of acute peritonitis caused by *Propionibacterium acnes* in a peritoneal dialysis patient.

Keywords: acute peritonitis, peritoneal dialysis, *Propionibacterium acnes*

Introduction

Propionibacterium acnes is a gram-positive human skin commensal that is involved in the pathogenesis of acne and prefers anaerobic growth conditions. It has been considered as a low virulence pathogen in different clinical conditions [1]. We present a case of acute peritonitis caused by *Propionibacterium acnes* in a peritoneal dialysis patient.

Case report

A 50-year-old male with end-stage renal disease caused by autosomal dominant polycystic kidney disease had started with continuous ambulatory peritoneal dialysis in April 2014. In June 2016 he was admitted to hospital with a 2-week history of episodic cloudy dialysis fluid (once in 5 days) all of them with normal leucocytes in dialysis effluent and sterile cultures without pain or febrility. Broad investigations to determine the cause of the sterile peritonitis were planned, however, two weeks after the onset of intermittent changes in dialysis effluent appearance, *Propionibacterium acnes* was identified from the effluent culture in anaerobic culture conditions. On admission, his temperature was 36°C, heart rate 72 beats per minute and blood pressure 120/70 mmHg. The abdomen was not painful, with palpable polycystic kidneys. Skin on his back was

covered by acnae. Peritoneal dialysis catheter exit-site was clear. Initial laboratory investigations revealed white blood count $6.9 \times 10^9/L$ with 69.7% neutrophils, hemoglobin 157 g/L, blood urea nitrogen 22.4 mmol/L, creatinine 1022 $\mu\text{mol/L}$ and C-reactive protein 17.2 mg/L. Leucocytes in effluent were $0.1 \times 10^9/L$ with predominance of neutrophils. Chest X-ray was normal, as well as plain abdominal X-ray. Intraperitoneal vancomycin combined with ciprofloxacin was initiated and continued for 10 days with additional 3 doses of vancomycin 1 g each applied weekly. Patient responded promptly with L in effluent 0.0 /L and C-reactive protein 2.4 mg/L at discharge from the hospital and no further episodes of cloudy dialysis fluid over the next year.

Discussion

Improvements in microbiological technologies for identification of the pathogenic microorganisms may contribute to decrease number of "sterile" peritonitis episodes. *P. acnes* has been associated with focal intracranial infections [2], infections of the cerebrospinal fluid shunt [3], corneal infections [4], endophthalmitis [5], endocarditis of both prosthetic [6] and native aortic valves [7]. It has also been identified as a cause of several orthopedic, silicone breast prosthesis, and prosthetic joint infections [8-10]. It has also been found on peritoneal catheters from patients without signs of infection [11]. The tendency of *P. acnes* to form biofilm [8] suggests potential benefit of intraperitoneal application as well as for prolonged antibiotic treatment to avoid recurrent infection.

It is important to stress that according to the current criteria [12], the patient had only two of the proposed criteria for acute peritonitis. Apart from the cloudy dialysate and positive culture, the patient did not have abdominal pain, high fever, nor increased leucocyte number in the peritoneal fluid. However, our case clearly demonstrate that even without clinical signs of peritonitis, such infection should occupy our attention and that therapy should be included with an aim to prevent possible con-

sequences. Another point is that one should carefully examine the PD patients skin, which is often neglected in clinical examination.

Conclusion

In conclusion, *Propionibacterium acnes* is a rare cause of clinically important infection in peritoneal dialysis patients. Low virulence of *P. acnes* may be the main cause of the low initial leucocytes count in effluent culture, as well as of insidious and nonspecific clinical course. Tendency of biofilm formation requires prolonged antimicrobial treatment.

Conflict of interest statement. None declared.

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