



## Acinetobacter lwoffii peritonitis in peritoneal dialysis: two cases report

### La péritonite à Acinéto**ba**cter lwoffii en dialyse péritonéale: à propos de deux cas

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#### ABSTRACT

Peritonitis is an important cause of morbidity and technique failure in peritoneal dialysis. Herein, we report peritonitis related to *Acinetobacter lwoffii* in two patients on peritoneal dialysis. The first case is a 63-year-old patient treated by automated peritoneal dialysis admitted with abdominal pain. The peritoneal effluent White Blood Cells count consisted of 280 cells/mm<sup>3</sup>. Then culture identified a multisensitive *Acinetobacter lwoffii*. Treatment with ceftazidime and ciprofloxacin had been started. The control dialysate culture was sterile after three weeks. The second patient is a 59-year-old female admitted because of diffuse abdominal pain and cloudy dialysate. The peritoneal effluent White Blood Cells count consisted of countless leukocytes, with predominantly polynuclear and culture identified *Acinetobacter lwoffii*. He received intraperitoneal ceftazidim and amikacin for three weeks. The control dialysate was sterile. *Acinetobacter lwoffii* is a rare cause of peritonitis and it can be treated successfully with early recognition and appropriate antibiotic therapy based on culture instead of catheter removal.

**Key words:** Peritonitis, peritoneal dialysis, *Acinetobacter lwoffii*

#### RÉSUMÉ

La péritonite est une cause importante de morbidité et d'échec technique en dialyse péritonéale. Nous rapportons ici une péritonite liée à *Acinetobacter lwoffii* chez deux patients en dialyse péritonéale. Le premier cas est un patient de 63 ans traité par dialyse péritonéale automatisée admis pour douleurs abdominales. Le nombre de globules blancs dans l'effluent péritonéal était de 280 cellules/mm<sup>3</sup>. Puis la culture a identifié un *Acinetobacter lwoffii* multisensible. Un traitement par ceftazidime et ciprofloxacine avait été instauré. La culture de dialysat témoin était stérile après trois semaines. Le deuxième patient est une femme de 59 ans admise en raison de douleurs abdominales diffuses et d'un dialysat trouble. La numération des globules blancs de l'effluent péritonéal se composait d'innombrables leucocytes, avec une prédominance polynucléaire et la culture identifiée *Acinetobacter lwoffii*. Il a reçu de la ceftazidime et de l'amikacine par voie intrapéritonéale pendant trois semaines. Le dialysat témoin était stérile. *Acinetobacter lwoffii* est une cause rare de péritonite et elle peut être traitée avec succès par une détection précoce et une antibiothérapie appropriée basée sur la culture au lieu du retrait du cathéter.

**Mots clés:** péritonite, dialyse péritonéale, acinéto**ba**cter lwoffii

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## INTRODUCTION

Peritonitis is still an important cause of morbidity and technique failure in patients with end-stage renal disease treated by peritoneal dialysis (PD). Different bacteria have been isolated from infected peritoneal effluent and the most common pathogens are revealed to be gram-positive bacteria. In other studies, however, gram-negative bacteria (GNB) cause 25% to 40% of PD peritonitis episodes worldwide and this percentage is still on the increase(1,2). *Acinetobacter lwoffii* (*A. lwoffii*) is a non-fermentative aerobic Gram-negative bacillus, present in the normal flora of the oropharynx and skin.

Herein, we report peritonitis related to *A. lwoffii* in two patients on PD. the control dialysate culture was sterile after three weeks

### Case presentation 1

A 63-year-old patient treated for end stage renal disease by automated peritoneal dialysis (APD) for two years admitted to the hospital with abdominal pain. His APD treatment consisted of two 5-L dialysis with 2 \* 5 L 1.36% glucose exchanges per day. His medical history included hypertension, resected recto sigmoid polyps, non-metastatic colonic adenocarcinoma treated and benign prostatic hyperplasia. The patient had three negative culture peritonitis episodes since initiation. On physical examinations, blood pressure was 120/60 mmHg and other systemic physical examination findings were within the normal range except for abdominal tenderness and cloudy dialysate. No signs of infection were observed at the PD catheter exit site or tunnel. His laboratory tests were as follows white blood cell count (WBC): 5750/mm<sup>3</sup> (with 70% neutrophils); albumin: 40gr/L; C-reactive protein (CRP): 13mg/L; hemoglobin: 9,2g/dL; BUN: 19,2mmol/L and creatinine: 539µmol/L. The peritoneal effluent WBC count consisted of 280 cells/mm<sup>3</sup>, with 90% polynuclear leucocytes and revealed no bacilli. Empiric treatment with ceftazidime 1 × 1 g intraperitoneal and vancomycin 1g per 5 days on intravenous had been started. fluoroquinolones have not been selected for their recent use (less than 3 months) because of acute pyelonephritis. The therapy efficacy was assessed by WBC in the effluent on days 3 and 5. Peritoneal fluid culture identified a multisensitive *A. lwoffii*. The sensitivity pattern of the *A.lwoffii* is shown in Table1. According to this peritoneal fluid culture, ciprofloxacin was added, ceftazidim was continued and vancomycin was stopped. Clinical and laboratory improvement (peritoneal fluid WBC 25/mm<sup>3</sup>) were observed on the third day of treatment. Therefore, an antibiotic treatment was perused for exactly 21 days and the control dialysate culture was sterile after three weeks. For five years of follow up, no episode of peritonitis occurred.

**Table 1.** Antimicrobial sensitivity patterns of *Acinetobacter lwoffii*

Antibiotic	Sensitivity
Amikacin	S
Gentamicin	S
Imipenem	S
Meropenem	S
Piperacillin/tazobactam	S
Ceftazidime	S
Ceftriaxone	S
Ciprofloxacin	S
Vancomycin	R
Trimethoprim/sulphamethoxazole	R
Amoxicillin/clavulanic acid	S
Tetracyclin	S
Cefoxitin	S
Cefixime	S

S: sensitive; R: resistant.

### Case presentation 2

A 59-year-old female patient, receiving continuous ambulatory peritoneal dialysis therapy (CAPD) for three years, was admitted to the hospital because of diffuse abdominal pain and cloudy dialysate since one day. The patient had experienced a previous peritonitis episode: that episode had occurred two years earlier, and the diagnosis was peritonitis attributed to *Streptococcus salivarius* and *staphylococcus aureus*. This episode was successfully treated by vancomycin and ciprofloxacin administered for 2 weeks, and the white cell counts in peritoneal effluent were normal. The CAPD treatment consisted of four 2-L dialysis with 3∅ 2.0 L 1.36% and 1 ∅ 2 L 2.27% glucose exchanges per day. On physical examination, blood pressure was 120/ 60 mmHg and fever at 39°C. No signs of infection were observed at the CAPD catheter exit site or tunnel. Initial laboratory tests were hemoglobin: 11.3g/dl, white blood cell count: 8020/mm<sup>3</sup> with 76% polynuclear leukocyte and creatinine: 557µmol/. The C-reactive protein level was 25mg/L. The peritoneal effluent WBC count consisted of countless leukocytes, with predominantly polynuclear but revealed no bacilli and culture was negative. The patient was initially treated with intravenous vancomycin and oral ciprofloxacin. Peritoneal fluid culture identified *A. lwoffii*. The sensitivity pattern of the *A.lwoffii* is shown in Table 2. According to the peritoneal fluid culture, vancomycin and ciprofloxacin treatments were stopped. The patient received 1g per day intraperitoneal ceftazidim and amikacin 250 mg the first day then 125 mg/day for 3 weeks. On the third day of treatment, the WBC count in the effluent was less than 100/mL and the control dialysate culture was sterile.

**Table 2.** Antimicrobial sensitivity patterns of *Acinetobacter lwoffii*

Antibiotic	Sensitivity
Amikacin	S
Gentamicin	S
Imipenem	S
Meropenem	S
Piperacillin/tazobactam	PS
Ceftazidime	S
Ceftriaxone	S
Ciprofloxacin	R
Trimethoprim/sulphamethoxazole	S
Amoxicillin/clavulanic acid	S
Tetracyclin	S
Rifamicin	S
Cefixime	PS

S: sensitive; PS: poorly sensitive; R: resistant.

## DISCUSSION

*Acinetobacter lwoffii*, formerly known as «*Mima polymorpha*», is a non-fermentative Gram-negative bacillus bacterium. It is present in the normal skin flora and can also inhabit the human oropharynx and perineum of up to 25% of the population. It is considered as an important pathogen in nosocomial infections, particularly catheter-associated infections in immunocompromised patients (3). It has also been associated with gastroenteritis (4). Some cases of community acquired infections related to *A.lwoffii* such as pneumonia, acute gastroenteritis, liver abscess, septicaemia, and endocarditis were described in the literature (4). Chao C-T et al. studied retrospectively over more than 20 years, 26 episodes of PD-related *Acinetobacter* species peritonitis and 9 (34%) peritonitis episodes associated with *A. lwoffii* (5). Huddam et al. (6) documented a case of a patient receiving CAPD who presented a peritonitis caused by *A.lwoffii* successfully treated by appropriate antibiotic therapy. Tas et al. (7) reported a case of *A.lwoffii* community-acquired peritonitis in APD patient without catheter or tunnel infection which was treated by antibiotics for two weeks.

Similar to the studies of Lye (8) and Valdez (9), our cases were community acquired, and the PD duration was two and three years. In addition, it is known that there is a tendency for *Acinetobacter* peritonitis to occur within the first one or two months after an episode of peritonitis caused by a different pathogen (8). In our first case, there was a preceding episode of culture negative peritonitis two months before; however, for the second case the preceding episode peritonitis was caused by a streptococcus and staphylococcus one year before this episode.

In literature, it is known that the nosocomial infections associated with *A. lwoffii* strains are resistant to several

antibiotics (10). In a retrospective review by Valdez et al, CAPD-related peritonitis due to *Acinetobacter* species were generally responsive to antimicrobials alone, because all cases were community-acquired (9). Tenckhoff catheter removal is not generally necessary in the course of *Acinetobacter* species related peritonitis. *Acinetobacter* peritonitis was usually treated with an early and appropriate antibiotic therapy instead of catheter removal (5,6). Similarly, *A. lwoffii* was sensitive to many antibiotics, in our two cases antibiogram, and Tenckhoff catheter removal was not necessary.

## CONCLUSION

In conclusion, community-acquired *A. lwoffii* is a rare cause of CAPD-related peritonitis. This infection can be treated successfully with early recognition and appropriate antibiotic therapy based on culture instead of catheter removal.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patients have given their consent for their clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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