中文題目：持續性非臥床腹膜透析引發巴斯德菌感染性腹膜炎

英文題目：Cat-induced Pasteurella multocida peritonitis in continuous ambulatory peritoneal dialysis

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Introduction

Peritonitis in patients undergoing peritoneal dialysis (PD) is a major cause of hospitalization, transfer to hemodialysis, and catheter removal. *Staphylococcus epidermidis* and *S. aureus* are the major pathogens implicated in PD peritonitis . However, *Pasteurella multocida* (*P. multocida*) is a rare cause of peritonitis in PD patients.[1] Pasteurella multocida is a zoonotic pathogen found in the oral cavities of both domestic and wild animals. Although P. multocida has been involved in a wide range of human diseases, only a limited number of studies on P. multocida peritonitis in patients undergoing peritoneal dialysis (PD) had been carried out. We reported the case of P. multocida peritonitis in a patient undergoing continuous ambulatory PD, which is believed to contact with cats. We suggest that patients undergoing PD and having domestic animals at home should be educated about the possible transmission of the infection from the animals and to know the high level of personal hygiene.[2]

Keywords:

Cat, Pasteurella multocida, Peritoneal dialysis, Peritonitis

Case report

A 38 years old man patient who developed ESRD after acute on chronic renal disease of acute gastroenteritis had been maintained on peritoneal dialysis without peritonitis since 10th September 2015. The patient was admitted to the hospital with sudden onset of diffuse abdominal pain with fever on 13thMarch 2018. Vital signs on admission were blood pressure of 123/86 mmHg, heart rate of 80 beats/min, body temperature of 38.3C. The abdominal examination was performed which revealed distended abdomen with diffuse abdomen tenderness, rebound tenderness and hypoactive bowel sounds. There was no evidence of exit site or catheter tunnel infection. However, he was close contact with household cat at home.

Results of lab tests revealed the following measurements: WBC count: 11900 cells/mm^3, Hb:12.1g/dl, Hct: 35%, platelet count: 222x 10^3/mm^3, BUN: 63 mg/dl, Cr: 13.77 mg/dl. Turbid PD effluent was noted. Under suspicion of peritonitis, the patient was treated with empirical antibiotic cefazolin and ceftizidime.

The patient initial ascites/dialysate WBC counts was 10/mm^3 with 92% predominant PMN cells and RBC was 770 cells/ml (table:1). Gram staining of the collected peritoneal fluid was negative. Blood culture result indicated that the organism was Pasteurella multocida (figure1). Other peritoneal effluent cultures including fungal and acid fast bacillus cultures were negative. After antibacterial therapy for 4 days, the patient's dialysate WBC count decrease to 78/mm^3, abdominal symptoms improved and the dialysate fluid become clear. Antibiotic was administered for 10 days and he was discharged without any complications.

	appearance	**color**	**clarity**	**PH**	**Sp.gr**	**rivalta**	**RBC Cells/ul**	**WBC Cells/ul**	**N;L**

13thMarch 2018	Watery	colorless	clear	7.2	1.010	positive	770	10	92%,3%
15thMarch 2018	watery	colorless	turbid	7.2	1.010	negative	90	860	86%,11%
17thMarch 2018	watery	colorless	clear	7.0	1.020	negative	3	78	53%,16%

N: neutrophil; L: lymphocyte
Table 1. Dialysate fluid analysis

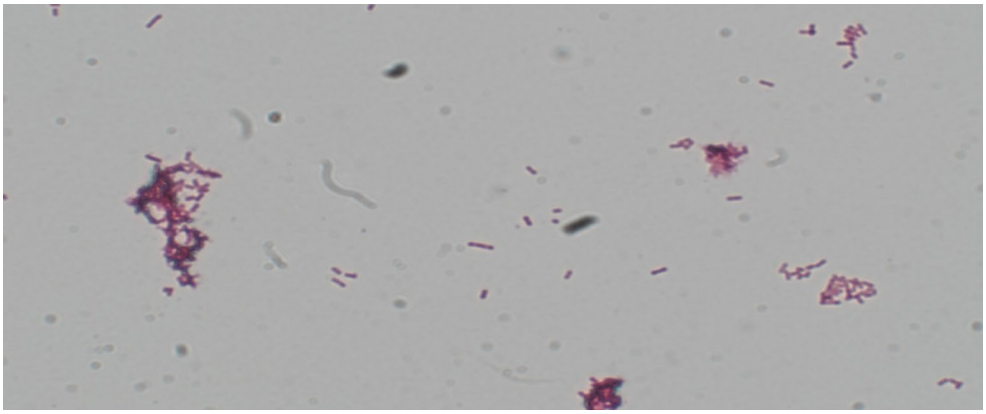

Figure 1. Pasteurella PD peritonitis gram stain

Discussion

Pasteurella multocida is a Gram-negative bacteria found in the oropharynx of many domestic animals. P. multocida can cause a variety of human infections, but it remains a rare cause of peritoneal dialysis-related peritonitis. We describe a severe case of peritoneal dialysis-related peritonitis due to P. multocida infection caused by close contact with a cat.The symptoms of PD-related peritonitis caused by *P. multocida* begin within 24 hours and improve within 48–96 hours of the initiation of antibiotics therapy. Previous studies have reported that the common symptoms of PD-related peritonitis cases caused by *P. multocida* are low- to moderate-grade fever, severe abdominal pain, and cloudy dialysate. Dialysate of PD-related peritonitis caused by *P. multocida* has a wide range of WBC counts (200–16,000 cells/mm^3) with increased levels of PMN leukocytes. However, Gram staining of dialysate or blood culture is usually negative.[3] Pasteurellosis is a zoonosis often caused by cat or dog bites or scratches, or by direct exposure to their secretions. Pasteurella multocida is the main pathogen involved in infections through domestic animal bites; generally a local infection characterized by its particular virulence with consequent rapid onset.[4] Pasteurella multocida is a zoonotic pathogen found in the oral cavities of domestic dogs and cats and other wild and domestic animals. 14 cases of peritoneal dialysis-associated Pasteurella multocida peritonitis linked to animal contact have been reported in the literature to date. In each case, the source of infection was believed to be a domestic cat or cats. A majority of PD-related peritonitis cases caused by *P. multocida* have been associated with pet cats; regular contact with domestic cats, cat bites, or scratches of dialysis tubes had been reported in 92.6% of patients with PD-related peritonitis (25/27 cases).[5] Poor hygiene in relation to pets was considered the source of infection. We describe the first case of Pasteurella multocida peritonitis in a patient undergoing continuous ambulatory peritoneal dialysis (CAPD) believed to be caused by contact with dogs and discuss the relevant literature.[6] *Pasteurella* species might be penicillin-resistant because they produce

β-lactamase; therefore, ampicillin/sulbactam, piperacillin/tazobactam, and amoxicillin/clavulanate are recommended for the treatment of *P. multocida[7]* Patients that display cloudy effluent after being treated with appropriate antibiotics for 5 days have refractory peritonitis and should have their catheter removed[8] *Pasteurella multocida* is a small, gram-negative, nonmotile, non–spore-forming coccobacillus with bipolar staining features. The bacteria typically appear as single bacilli on Gram stain; however, pairs and short chains can also be seen.

Conclusions

Pasteurella multocida is a zoonotic pathogen found in the oral cavities of both domestic and wild animals. Although P. multocida has been involved in a wide range of human diseases, only a limited number of studies on P. multocida peritonitis in patients undergoing peritoneal dialysis (PD) had been carried out. We herein present the case of P. multocida peritonitis in a patient undergoing continuous ambulatory PD, which is believed to have resulted from contact with cats. We suggest that patients undergoing PD and having domestic animals at home should be educated about the possible transmission of the infection from the animals; in addition, these patients should also maintain a high level of personal hygiene.

Disclosure statement

No potential conflict of interest was reported by the authors.

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