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Case Report

Listeria Peritonitis in a Patient on Automated Peritoneal Dialysis (APD)

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Keywords

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Abstract

Peritoneal dialysis (PD) associated peritonitis is a frequent occurrence in patients who are managed with PD. Usual organisms for PD peritonitis in New Zealand are gram-positive organisms. Infection with gram-positive bacilli in immunocompromised patients is infrequently reported in the literature. To our knowledge, this is the first reported case of PD associated peritonitis due to Listeria monocytogenes in an immunocompetent patient, and first such case report from New Zealand. The aim of this report is to share useful clinical information pertaining to the occurrence and treatment of this rare sporadic cause of peritonitis.

ABBREVIATIONS

APD: Automated Peritoneal Dialysis; PD: Peritoneal Dialysis; *L. monocytogenes*: *Listeria monocytogenes;* I.V: Intra-Venous; IP: Intra-Peritoneal

INTRODUCTION

Peritoneal dialysis (PD) associated peritonitis is a frequent occurrence in patients who are managed with PD. Usual organisms for PD peritonitis in New Zealand (Figure 1) are gram-positive including coagulase-negative Staphylococcus, methicillin sensitive and resistant *Staphylococcus aureus*, gram-negative organisms, polymicrobial, and fungal etc [1]. Infection with gram-positive bacilli is infrequently reported in the literature [2]. To our knowledge, this is the first reported case of PD associated peritonitis due to *Listeria monocytogenes* in New Zealand. The aim of this report is to share useful clinical information pertaining to the occurrence and treatment of this rare sporadic cause of peritonitis.

CASE PRESENTATION

A 58 years old Caucasian female on APD for 6 years presented to her routine PD review with hypotension, mild abdominal pain, feeling generally unwell and increased cough. Her initial PD fluid sample was noted to be cloudy, and empiric intra-peritoneal (IP) cefazolin, oral ciprofloxacin and oral nystatin were commenced. On further enquiry she admitted to also having headaches and photophobia for few days prior to the clinic. She reported eating salami and occasionally home culled and/or home prepared cured meat. PD fluid culture grew *Listeria monocytogenes* after 24 hours. The antibiotics were changed to IP vancomycin and intravenous (i.v.) amoxicillin, with i.v. gentamicin (added for synergistic effect). 48 hours after admission she deteriorated with increasing abdominal pain and worsening chest symptoms. The antibiotics were adjusted to i.v. augmentin and IP amoxicillin added to each APD bag (2x 1.5% dianeal + 1x 7.5% extraneal).

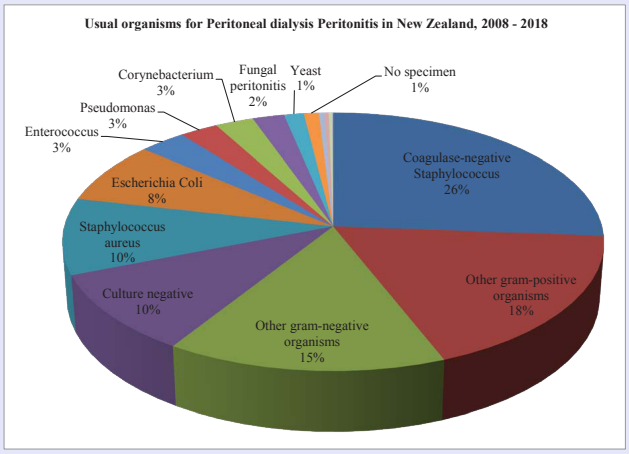

Figure 1 Usual organisms for peritoneal dialysis peritonitis in New Zealand, 2008-2018.

Oral cotrimoxazole was commenced and one more dose of i.v. gentamicin was administered. PD fluid results are presented in Table 1. Her symptoms resolved and she was discharged home on IP amoxicillin in each APD bag for a total of 3 weeks (self-administered at home) and oral augmentin for 2 weeks. After 8 days of treatment, the patient reported non-specific symptoms which were attributed to cotrimoxazole and it was discontinued. Oral nystatin was used as prophylaxis for fungal peritonitis as per the guidelines. PD fluid remained clear 4 weeks after completion of treatment. Blood culture (aerobic and anaerobic) samples taken at the time of admission and upon clinical deterioration remained consistently negative. We decided to use both oral and IP amoxicillin due to the reduced bioavailability of amoxicillin at 24 hours when administered mixed in the PD fluid such as extraneal [3].

DISCUSSION

L. monocytogenes peritonitis is a rare occurrence in patients on peritoneal dialysis. This is only the second reported incidence of *L. monocytogenes* peritonitis in a patient on APD and first case in an immunocompetent patient [2]. There is a paucity of information regarding the optimal antibiotic dose for IP administration in this setting. Amoxicillin, cephalosporin, vancomycin, cotrimoxazole, and aminoglycosides (gentamicin or amikacin) have been used in combination orally, intravenously and IP. From our experience and a review of literature reported by Poulsen et al [2], we recommend using amoxicillin 500 mg in each PD bag for 3 weeks with additional amoxicillin for two weeks (initially i.v. then changing to oral). This can be supplemented with cotrimoxazole consistent with the local practice for the management of *Listeria* meningitis. In the presence of suspected concurrent meningitis, we suggest following guidelines for the treatment of *Listeria* meningitis with i.v. amoxicillin and cotrimoxazole for 10-14 days. Consultation with infectious disease physicians should be considered at an early stage. Our patient deteriorated in the first 48 hours on i.v. amoxicillin and IP vancomycin. Antibiotics were then modified with i.v. augmentin replacing i.v. amoxicillin to broaden antimicrobial coverage due to her predominant chest symptoms at the time of her deterioration and IP vancomycin was changed to IP amoxicillin. Based on our experience, we do not think IP vancomycin to be a good choice of antibiotic for treatment of *L. monocytogenes* peritonitis.

Table 1: PD fluid results.

PD fluid sample	PD fluid White Cell count (neutrophil percentage)	PD fluid Culture result
D0	410 x 10^6 (63%)	*L. monocytogenes*
D1	133 x 10^6	
D2	565 x 10^6 (44%)	No growth
D3	21 x 10^6	
D4	17 x 10^6	
D21	6 x 10^6	
D48	4 x 10^6	

Abbreviations: ¶PD Peritoneal dialysis; * Listeria Monocytogenes

CONCLUSION

L. monocytogenes peritonitis is reported sporadically. Guidelines on the use of appropriate antibiotics, route of administration and duration of treatment of such rare infections would be useful, although difficult to develop.

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