

The Significance of Acid-Fast Cultures in Peritoneal Dialysis-Associated Infections:

A Non-tuberculous *Mycobacteria* Case Series

Heather Lusby DO, Division of Infectious Diseases & Global Medicine, University of Florida College of Medicine;
Anthony P. Cannella MD, MSc, Department of Infectious Disease & International Medicine, University of South Florida Morsani College of Medicine

Email: Heather.lusby@medicine.ufl.edu

Introduction

- Non-tuberculosis mycobacteria (NTM) are a group of *Mycobacterium* that are defined as species other than *Mycobacterium tuberculosis* complex and *Mycobacterium leprae*.¹
- Mycobacteria are classified as rapid or slow growers based upon their *in vitro* growth characteristics
- Rapid growing NTM's grow on culture media as early as 5-7 days.²
- NTMs are considered a rare cause of peritoneal dialysis (PD) associated infections.
- Here, highlighted four cases of PD catheter associated infections due to rapid growing NTMs to convey the importance of these bacteria in the setting of PD associated infections.

Case Presentations

- All cases were on PD due to their end stage renal disease (ESRD) and grew a rapid growing NTM either causing exit site infection (ESI) or peritonitis, details are in Table 1
- Case 1 is a 55-year-old male who was on PD due to IgA nephropathy. Presented after ulceration around catheter site and abdominal pain for 3 months.
- Case 2 is a 59-year-old woman with who was on PD due to Alport syndrome. She presented with 1 week of fever and pain around PD catheter site.
- Case 3 is a 68-year-old woman who was on PD due to diabetic nephropathy. She presented after increased drainage around PD-catheter site after 2 months duration.
- Case 4 is a 73-year-old male with who was on PD due to diabetic nephropathy. He presented due to erythema around his PD catheter site for unknown duration of time.
- Each case was treated based upon culture data and for varied length of time, which can be further seen in Table 1.

Results

Table 1: Characteristics and Treatment of Cases

	Age	Culture site(s)	Pathogen	Treatment	Complications	Duration
Case 1	55	Peritoneal catheter exit site Peritoneal fluid	<i>Mycobacterium abscessus</i> complex	<u>Initially</u> • intraperitoneal amikacin 240mg Q daily • Intraperitoneal Imipenem 750mg Q daily • Oral Azithromycin 250mg PO <u>Changed to</u> • Azithromycin 250mg PO Q 24 hours • Meropenem 1.25g IV daily • Tigecycline 12.5mg IV daily	• Amikacin was stopped due to hearing loss • Peritonitis	6 months
Case 2	59	Peritoneal catheter site	<i>Mycobacterium fortuitum</i>	• Clarithromycin 500mg PO Q 24 hours • Ciprofloxacin 500mg PO Q 24 hours		8 months
Case 3	68	Peritoneal catheter exit site	<i>Mycobacterium porcinum</i>	• Ciprofloxacin 250mg PO daily • Linezolid 600mg PO daily • Amikacin 550mg initial dose IV	• Expired prior to completing treatment	N/A
Case 4	73	Peritoneal catheter site	<i>Mycobacterium abscessus</i> complex	• Amikacin 150mg Q 48 hours IV • Meropenem 500MG IV Q 24 hours • Linezolid 600mg PO Q 24 hours • Azithromycin 250mg Q 24 hours	• Peritonitis	6 months

Conclusions

- Typically organisms that cause peritonitis and PD exit site infections are from skin flora
- The International Society of Peritoneal Dialysis (ISPD) currently recommends only anaerobic and aerobic cultures to be obtained in suspected peritonitis.
- Expected culture negative rate per the guidelines are typically expected to be about 10-20%.³
- NTM's can be missed on routine cultures, and could potentially be diagnosed as a culture negative PD catheter associated infection.
- High index of suspicion would mandate culturing for NTMs as a potential cause of PD catheter associated infection.
- The preferred route of treatment for peritonitis is intraperitoneal for typical infections, although the recommendations for NTM's are not clearly stated.³
- We would like to stress the importance of ordering acid fast bacilli (AFB) cultures in PD catheter associated infections in endemic areas.

References

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3. Whitty R, Bargman JM, Kiss A, Dresser L, Lui P. Residual Kidney Function and Peritoneal Dialysis-Associated Peritonitis Treatment Outcomes. *Clin J Am Soc Nephrol*. 2017;12(12):2016–2022. doi:10.2215/CJN.00630117
4. Li PK, Szeto CC, Piraino B, et al. ISPD Peritonitis Recommendations: 2016 Update on Prevention and Treatment [published correction appears in *Perit Dial Int*. 2018 Jul-Aug;38(4):313]. *Perit Dial Int*. 2016;36(5):481–508. doi:10.3747/pdi.2016.00078

Figure 1



Photo of PD catheter site from Case 4.

Figure 2



Photo of Mucolytic culture bottle to that differs from typical from typical culture media.

Figure 3

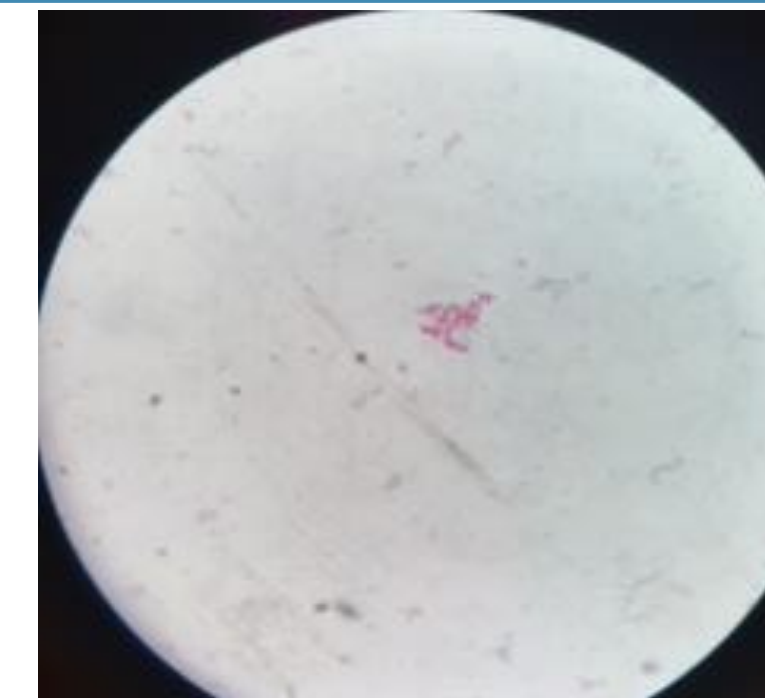


Photo of positive AFB smear of *M. abscessus* specimen.