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P124 -Case Report of the use of IP Daptomycin to treat VRE PD Peritonitis in a patient on APD

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Case Report
A 53-year-old Asian female developed ESRF secondary to diabetic nephropathy. She commenced APD in December 2017 and since then has been admitted on multiple occasions with PD peritonitis. In May 2018 she was discharged with oral linezolid to treat VRE in the PD fluid. Non-compliance with linezolid led to resistance and she consequently presented to the Royal Free Hospital (RFH) outpatient department with ongoing VRE PD Peritonitis in July 2018. Following MDT discussion, treatment was switched to IP daptomycin 6mg/kg 48 hourly for 2 weeks. The decision was made to keep the patient on APD despite the limited data on dosage recommendations. The dose was reconstituted and added immediately to a 1.36% PD fluid (PDF) bag for a dwell time of 6 hours due to stability issues. Advice was also given with regards to monitoring. Creatinine Kinase (CK) level was taken at baseline and then twice weekly. Daptomycin levels were monitored weekly however no assays run at RFH. Trough levels were sent to Bristol Labs and would take ~5 days to be processed with the aim for serum levels between 5-20mg/L. The patient was counselled on recognising signs of adverse reactions and was taught how to administer IP antibiotics by the PD nurses.

PK challenges of using Daptomycin in APD:

- Highly protein bound (90-93%) so IV daptomycin difficult to reach therapeutic concentrations in PD Fluid
- Has specific anti- biofilm activity in vitro, which may be beneficial for the treatment of peritonitis
- Undergoes 15%-20% degradation in 5% dextrose at room temperature in 24 hours therefore stability concerns during dwell

Studies show daptomycin remains stable in 1.36 and 2.27% dextrose PDF along with amino acid (nutrineal) PDF for up to 6 hours at 25-37°C so dwell time should be limited to 6 hours. A case report treated an APD patient with IP daptomycin 7mg/kg administered at the completion of APD and dwelled for 12 hours. This resulted in a peak serum level more than 10 times the MIC90 for MRSA. However, the toxicity profile is unknown. Another study looked at the pharmacokinetics (PK) and pharmacodynamics of IV daptomycin in PD patients. PK modelling and Monte Carlo simulation was used to conclude that a 4-6mg/kg dose every 48 hours was the optimal dosing scheme. The duration of therapy in all case reports was between 10-14 days in which infection was successfully eradicated.

Outcome
The patient responded with no side effects. Doses were not adjusted, and therapeutic drug levels were achieved throughout treatment. CK levels were monitored throughout and showed no increase. WCC in PDF improved and VRE infection was eradicated. The duration of antibiotics was extended for three weeks due to other contributing factors including patient being readmitted to hospital.

Conclusion
There is very limited information on the use of IP daptomycin in APD patients. This case report suggests that IP daptomycin is an effective treatment for VRE peritonitis and an APD dose of 6mg/kg IP every 48 hours resulted in levels within range and no side effects in this patient.