Care Beyond the Ward: Inclusion Health in Action with Long-Acting Lipoglycopeptides for Pneumonia

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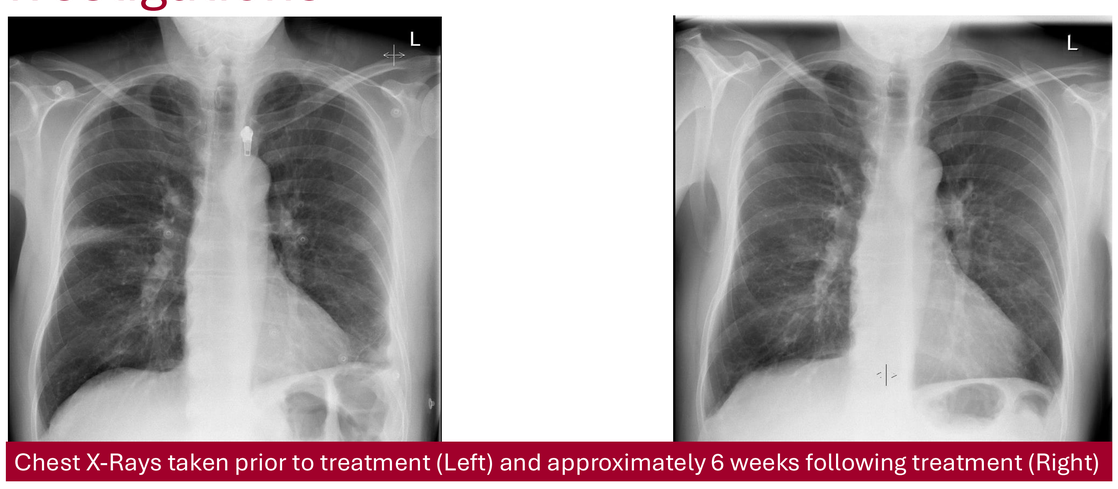
Background

Long-acting Lipoglycopeptide antibiotics, such as dalbavancin and oritavancin, are licensed in Ireland for the treatment of skin and soft tissue infections. However, their long duration of activity – approximately 14 days – and their spectrum of activity which includes resistant organisms such as *Methicillin-Resistant Staphylococcus Aureus (MRSA)* [1] have contributed towards their use in providing effective treatment for infections, while potentially avoiding or shortening inpatient hospital stays.

Case History

- A 48 year old male presented to the Emergency Department with a three-day history of worsening productive cough, dyspnoea and chest pain which was worse on exertion and inspiration.
- This is on a background of significant mental health issues, including substance abuse and schizophrenia. At the time of presentation, this patient was of no fixed abode and an active smoker. These factors result in frequent, almost daily attendances to the ED.
- Despite his frequent attendances, this patient often self-discharges prior to assessment and treatment.
- On examination, he had an audible wheeze with crackles appreciable posteriorly over the left lower zone. His cardiovascular and abdominal examination were unremarkable.

Investigations



Chest X-Rays taken prior to treatment (Left) and approximately 6 weeks following treatment (Right)

Laboratory Results

Hb	12.9
WCC	22.6
Neutrophils	9.29
Eosinophils	7.30
C Reactive Protein	42.5

Microbiology

Sputum Sample Isolate	*Streptococcus Pneumoniae*
Susceptibilities	Ceftriaxone
Resistances	Penicillin, Tetracycline, Erythromycin

Treatment Progress

- With the isolation of a resistant strain of *Streptococcus Pneumoniae* from a sputum sample, the decision was made to commence the patient on appropriate anti-microbial therapy
- Due to the patient's previous history of discharges and his mental health status, there were concerns about his potential compliance with traditional methods of treatment.
- Shortly following this presentation, the patient opted to discharge again against medical advice.
- Due to its long duration of activity, and efficacy against resistant organisms, the decision was made to administer dalbavancin intravenously during the patients next ED attendance. ED staff were briefed on this management plan, and the medication was dispensed by the pharmacy department.
- Approximately one week following this, the patient re-presented to the ED and remained in hospital to receive dalbavancin, before again discharging against medical advice.
- On subsequent visits, the patient has had a symptomatic improvement, including improvement of previously noted opacifications on his chest X-ray.

Discussion

- This case stands at the intersection of many areas relevant to the specialty of infectious diseases, such as inclusion health, antimicrobial resistance and novel antimicrobials.
- *S. Pneumoniae* is a common cause of respiratory tract infections in the community and while normally susceptible to penicillin-based antibiotics, growing rates of resistance can pose obstacles towards treatment.
- Traditional treatment for *S. Pneumoniae* would comprise a course of either oral or intravenous antibiotics which are not suitable for some patients, such as those with medication allergies, issues with medication compliance or poor engagement with healthcare services. Long-acting lipoglycopeptide antibiotics may provide a safe and effective method of treatment for patients in these situations.
- Additionally, while expensive, the administration of these novel agents may provide an effective and economical alternative to , or reduction in duration of, acute hospital admission for patients requiring therapy for susceptible infections[2].

References:

1. Silva, V. et al., Efficacy of dalbavancin against MRSA biofilms in a rat model of orthopaedic implant-associated infection, *Journal of Antimicrobial Chemotherapy*, Volume 75, Issue 8, August 2020, Pages 2182–2187, https://doi.org/10.1093/jac/dkaa163
2. McCarthy, MW. et al. Dalbavancin Reduces Hospital Stay and Improves Productivity for Patients with Acute Bacterial Skin and Skin Structure Infections: The ENHANCE Trial. Infect Dis Ther. 2020 Mar;9(1):53-67. doi: 10.1007/s40121-019-00275-4. Epub 2019 Nov 11. PMID: 31713130; PMCID: PMC7054506.