Telavancin Use in Hospitalized Patients with Diminished Renal Clearance

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Introduction

- Telavancin is a parenteral lipoglycopeptide antibiotic with activity against Gram positive organisms, including MRSA. At AtlantiCare Regional Medical Center (ARMC), telavancin is typically utilized for patients who do not respond to vancomycin, have pathogens with reduced sensitivity to other antibiotics, and/or have infections involving prosthetic hardware.
- There is a safety concern for acute kidney injury (AKI) with telavancin, which causes some providers to have reservations for use in patients with impaired renal function. This investigation will examine telavancin use in patients with impaired renal function.

Objective

The purpose of this study is to assess telavancin use in hospitalized patients with pre-existing renal dysfunction, with a focus on any changes in renal clearance and patient outcomes.

Methods

- The retrospective case series included patients who received at least 3 doses of telavancin between January 2010 and May 2024, and had a preexisting creatinine clearance (CrCl) of less than 60 mL/min with a serum creatinine (SCr) of 1.3 mg/dL or greater. Patients were identified from a generated report using Cerner Discern Analytics 2.0. Patients on dialysis prior to receiving telavancin were excluded.
- Medical records were reviewed for pertinent data including demographics, telavancin dosage, duration of therapy, infection type, prior antibiotic use, and concomitant nephrotoxins. Renal function and CrCl were evaluated for each patient throughout their course of treatment. Patient outcomes and response to antibiotic therapy were determined based on investigator assessment, utilizing appropriate monitoring parameters, considering the infection type, along with provider progress notes. Approval by the hospital institutional review board was obtained for this project.

Results

Table 1: Patient Characteristics and Findings	(n=34)
Mean Age – Years (SD)	63.3 (± 15.5)
Male Sex – n (%)	18 (52.9%)
Mean Weight – kg (SD)	86.6 (± 28.4)
Mean Telavancin Dose – mg (SD)	697.9 (± 106.0)
Mean Telavancin Dose - mg/kg (SD)	8.0 (± 1.4)
Mean Telavancin Duration – Days (SD)	8.4 (± 6.6)
SCr Increased ≥ 0.3 mg/dL at EOTT* – n (%)	6 (17.6)
SCr Decreased at EOTT* – n (%)	25 (73.5)
Concomitant Nephrotoxins – n (%)	24 (70.6)
MRSA Blood Culture – n (%)	20 (58.8)
Gram (+) Bacteremia – n (%)	26 (76.5)
Vancomycin Non-Responder – n (%)	25 (73.5)
Osteomyelitis / Endocarditis / Septic Arthritis – n (%)	16 (47.1)
Clinical Response to Telavancin^ – n (%)	25 (73.5)
Telavancin Non-Responders – n (%)	7 (20.6)
Changed Antibiotic from Telavancin^{o} – n (%)	15 (44.1)

*End of Telavancin Treatment (EOTT)
^Clinical improvement without worsening renal function, blood culture clearance
^{o}Any of the following: failure to respond, worsening renal function, transition to oral or outpatient IV antibiotics

Table 2: Renal Changes	Start Telavancin	End Telavancin	Difference
Mean SCr – mg/dL (SD)	2.2 (± 1.3)	1.6 (± 1.3)	⇩ 27.3%
Mean CrCl - mL/min (SD)	36.7 (± 13.7)	62.0 (± 36.0)	⇧ 40.8%

Discussion

- In this evaluation of patients with AKI and / or pre-existing renal dysfunction, renal function did not worsen in 82% of patients at the EOTT, with improved renal function in most patients. Approximately 18% had an increased SCr at the EOTT. (**Tables 1 & 2**)
- The improved CrCl in patients on telavancin therapy was likely related to their clinical improvement. Over 85% of our inpatients had failed at least one prior antibiotic, and 76.5% were not responding to antibiotic treatment for Gram (+) bacteremia.
- Standard telavancin dosing is 10mg/kg daily. At ARMC, a lower dosage has been utilized (7.5-8 mg/kg) based on clinical evidence, which may have impacted our findings, which further supports this dosing initiative.
- In our study, telavancin appears to be an effective antibiotic treatment for those with diminished renal dysfunction. A 74% positive clinical response rate demonstrates the value telavancin may provide in hospitalized patients.

Conclusion

Study findings demonstrate that telavancin is an effective option for inpatients with serious Gram-positive infections despite concerns for renal toxicity. Response to telavancin may result in an improvement of renal function.

References