Abstract Review

Showcasing the latest research in the fields of microbiology and infectious diseases from abstracts presented at the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) Global Congress 2024.

Oritavancin Use in Patients with Recurrent Bone Infections by Methicillin-Resistant *Staphylococcus aureus* and Role of Therapeutic Drug Monitoring

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BACKGROUND

Oritavancin is a novel long-acting lipoglycopeptide that is active against gram-positive micro-organisms, including methicillin-resistant *Staphylococcus aureus* (MRSA) and *enterococci*.[1] The pivotal clinical trials SOLO I and SOLO II demonstrated non-inferiority of oritavancin compared to vancomycin for the treatment of acute bacterial skin and skin structure infections.[2,3] Due to its favourable pharmacokinetic/pharmacodynamic properties and safety profile, oritavancin is considered a possible option for beyond-the-label infections that need longer treatments, such as osteomyelitis.[4] Its use in the context of recurrent bone infections by MRSA not responding to conventional antibiotics has not yet been evaluated, nor the potential benefit of therapeutic drug monitoring (TDM).

CASE 1

An 84-year-old male with MRSA spondylodiscitis (L4) was treated with surgical drainage and vancomycin, which was subsequently replaced by daptomycin (8 mg/kg) due to kidney failure. Daptomycin was administered for 6 weeks, but 1 week after stopping, the patient was hospitalised again for septic shock due to MRSA. MRI showed a progression of the abscess with L5 involvement. Despite surgical drainage and targeted antibiotic treatment, the fever persisted for more than 2 weeks, which prompted the switch to oritavancin, administered at a dose of 1,200 mg every 10 days, four times (minimum inhibitory concentration [MIC] for oritavancin: 0.125 mg/L). Researchers followed the patient for 10 months and MRI showed a complete regression of spondylodiscitis. The trough

plasma concentrations (C_{min}) of oritavancin measured 1 hour prior to each administration were 2.2, 1.9, and 2.3 mg/L.

CASE 2

A 61-year-old male with osteomyelitis due to diabetic foot involving the right III, IV, and V metatarsal bones was repeatedly hospitalised for MRSA sepsis. The first episode was treated with vancomycin for 4 weeks; the second, which occurred 2 weeks later, was treated with daptomycin (8 mg/kg) for 4 additional weeks. One month later, the patient presented a third septic episode and refused the proposed amputation. Therefore, oritavancin at a dose of 1,200 mg every 10 days was initiated (MIC for oritavancin: 0.060 mg/L), and administered five times. Six months after oritavancin discontinuation, the MRI showed complete regression of the osteomyelitis. The C_{min} values of oritavancin measured 1 hour prior to each administration were 2.1, 2.5, 3.3, and 4.4 mg/L.

CONCLUSION

Despite the high rate of clinical success and the bactericidal activity *in vitro* of oritavancin, definitive recommendations on optimal dose, number of doses, and dosing interval for the treatment of osteomyelitis are lacking.[5] The strains isolated from the patients had different MICs; nevertheless, the team used the same loading dose and the same dosing interval, but different maintenance doses. Patient 2 had a lower MIC value, a renal impairment, and a progressive increase of C_{min} levels; however, the team decided to administer 1,200 mg for loading and maintenance doses to minimise the risk of amputation, considering the absence of toxicity. TDM was useful to ensure that oritavancin concentrations were maintained above the MIC after correction for protein binding. However, larger studies are warranted to determine the optimal area under the curve/MIC target for the treatment of bone infections. In conclusion, oritavancin represents a valid therapeutic option for MRSA osteomyelitis. TDM could be an essential tool to individualise and tailor oritavancin dose and dosing intervals in order to achieve appropriate concentration-time curve and area under the curve/MIC ratio in each patient. ●

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