Annals of Clinical Case Reports

Case Report
Published: 13 May, 2024

Long-Life Suppressive Treatment with Dalbavancin: May it be for Real?

Mazzitelli M[1], Barbieri U[2], Scaglione V[1], Cattarin L[3], Nalesso F[3], Mengato D[4], Artusi C[5], Basso D[5], Pea F[6,7] and Cattelan A[1]*

[1]*Infectious and Tropical Diseases Unit, Padua University Hospital, Italy*

[2]*School of Medicine and Surgery, Padua University Hospital, Italy*

[3]*Nephrology Unit, Padua University Hospital, Italy*

[4]*Hospital Pharmacy Unit, Padua University Hospital, Italy*

[5]*Department of Medicine-DIMED, University of Padova, Italy*

[6]*Department of Medical and Surgical Sciences, Alma Mater Studiorum, University of Bologna, Italy*

[7]*Clinical Pharmacology Unit, IRCCS Azienda Ospedaliero Universitaria di Bologna, Italy*

Keywords

Dalbavancin; Prosthetic infection; Aortic prosthetic; MSSA; Suppressive antibiotic treatment

Introduction

Thanks to innovations and research, recently new long-acting antibiotics became available. These have made possible to manage home very serious infections which would have instead required hospitalization for daily intravenous antibiotic administration, leading to cost savings and an improvement in patient quality of life [1-3]. Dalbavancin is, together with Oritavancin, one of these antibiotics. Immediately after being licensed, a lot of data emerged, especially relating to off-label uses for the treatment of prosthetic infections, spondylodiscitis, and cardiac infections [4-6]. We herein report the longest suppressive treatment with dalbavancin for an infection of aortic endoprosthesis.

Case Presentation

On May 31st, 2021, a 35-year-old gentleman came to our emergency room complaining of a 3-day lasting fatigue and fever (up to 40°C). He rapidly evolved to septic shock, with acute kidney injury (white blood count =14.4 × 10^9, CRP=393 mgL, procalcitonin =7.1 ng/ml, serum creatinine =279 µg/L, blood urea =19.9 µmol/L, BP=70/40 mmHg). The patient was immediately stabilized with liquid infusions and an empirical antibiotic treatment with meropenem plus daptomycin was started.

He had a very complex clinical history due to Marfan syndrome (Bentall procedure for the replacement of an aneurysmal ascending aorta, 2004, mechanical aortic valve implant due to valve insufficiency in 2007, and in the winter of 2020, a branched endoprosthesis and bridging stent position in the celiac tripod, superior mesenteric artery, and renal arteries, due to a thoracoabdominal aortic aneurysm (6.5 cm). This latter was complicated by a thrombosis of the left renal artery bridging stent, leading to the left kidney loss. He suffered also from hypertension, glaucoma (which led to bilateral replacement of the lens, with a first surgical procedure in 2010 and reintervention in 2019) and episodes of ocular hemorrhages. The patient was on treatment with warfarin, atenolol, and losartan.

On the third day of hospitalization, Methicillin-Susceptible *Staphylococcus aureus* (MSSA) grew from blood cultures. Antibiotic treatment was de-escalated to oxacillin 12 g/day. PET/CT showed mild hypermetabolism of the endoprosthesis walls in the distal thoracic descending aorta, more pronounced at the thoracoabdominal transition on the aneurysmal wall, with uptake also observed at the level of D11 to the iliac bifurcation and common hepatic artery and celiac tripod.

The patient clinically improved, with follow-up blood culture negativization and healing of fever, but on June 16th, for the detection of a new thoracoabdominal aneurysm with type 1B endoleak an EVAR repair was performed on June 23rd by placing an aorto-bifurcated endoprosthesis, complicated by endoprosthesis dislocation, type 3 leakage, worsening the aneurysm and seizures

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Correspondence:
Mazzitelli Maria, Infectious and Tropical Disease Unit, Padua University Hospital, Italy,

Received Date: *25 Apr 2024*
Accepted Date: *07 May 2024*
Published Date: *13 May 2024*

Citation:
Mazzitelli M, Barbieri U, Scaglione V, Cattarin L, Nalesso F, Mengato D, et al. Long-Life Suppressive Treatment with Dalbavancin: May it be for Real?. Ann Clin Case Rep. 2024; 9: 2624.
ISSN: 2474-1655.

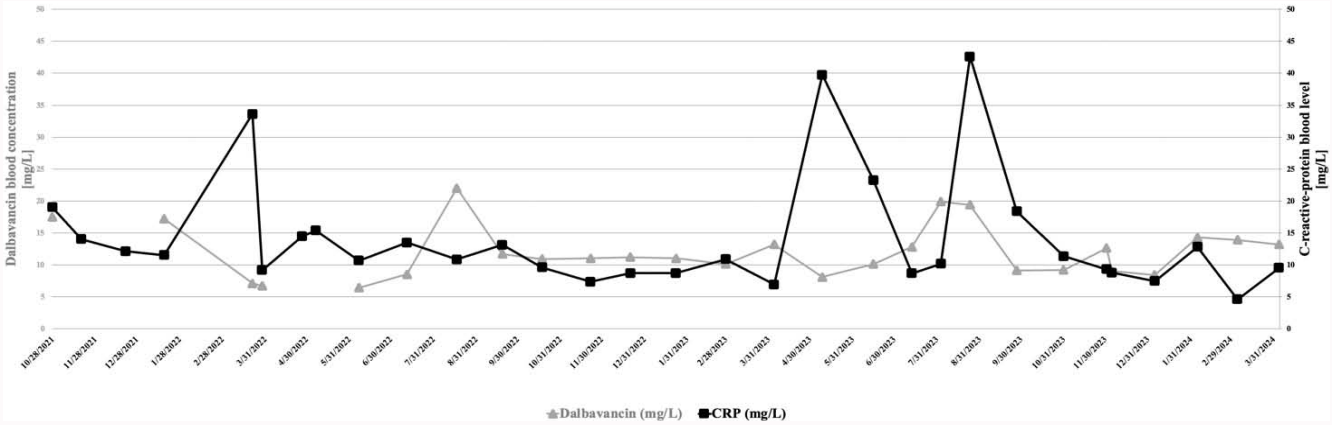

Figure 1: Evolution of CRP and Dalbavancin concentration over time.

3 days later, with the need of a further re-intervention which was successful. Small hemorrhagic outcomes in the left parietal lobe and contrast-enhancing pathological tissue at the level of the left Luschka foramen were detected by brain MRI. A follow-up PET/CT on July 12th showed increased hypermetabolism around the whole thoracoabdominal aorta, compatible with persistent periprosthetic infection and hypermetabolism at the Luschka foramen (compatible with an infective emboli).

The only true effective treatment for such situation would have been a prosthetic replacement, considering antibiotic therapy *quoad vitam* poorly feasible due to limited chances of success. However, a new intervention was deemed impossible, due to the patient clinical fragility. Therefore, we decided to start co-treatment with IV dalbavancin plus oral cotrimoxazole, since co-treatment with rifampicin was deemed unfeasible because of potential drug-drug interaction with warfarin. Single 1,500 mg dalbavancin doses were administered on day 1, then on day 8, and subsequently every 30 to 35 days, with periodic assessment (starting from October 2021) of Therapeutic Drug Monitoring (TDM) of dalbavancin levels at 28 to 35 days after each administration. TDM showed that dalbavancin concentrations persisted above the currently recommended threshold of 8.04 mg/L during the overall treatment period, except that in the interval between March and May 2022. This threshold is the value suggested for granting optimal empirical treatment against *Staphylococcus aureus* with an MIC value up to the EUCAST clinical breakpoint of 0.125 mg/L [7,8]. On July 15th, the patient was discharged and followed up as an outpatient (Figure 1, evolution of dalbavancin concentration and CRP over time). Cotrimoxazole was discontinued after 1 week due to allergic skin rash.

The therapy appears effective in controlling the infection: The patient appeared healthy during visits (except two episodes of intercurrent COVID-19 and one upper respiratory tract infection – three peaks of CRP in Figure 1), follow-up blood cultures remained negative, and CRP significantly decreased over time. Follow-up PET/CTs still show diffuse pathological uptake on the endoprosthesis, but with a progressive reduction over time and a reduction in the thoracoabdominal aneurysmal sac. Modest metabolism persisted at the Luschka foramen, also decreasing over time. To March 31st, 2024, the patient is in good clinical conditions and continues his monthly dalbavancin infusions. Moreover, he was able to continue to work and to maintain a good quality of life, outside of the hospital setting.

Discussion/Conclusion

This case shows how in very serious infections it is possible to maintain a chronic suppressive regimen in the outpatient setting, with the help of a strict laboratory and TDM monitoring [8]. However, although this is the case with the longest dalbavancin treatment of such infection ever reported (>160 weeks), we cannot predict its duration, considering the recurrent aneurysms occurred in the clinical history due Marfan syndrome.

Ethics

The patient gave her written informed consent for off-label use of dalbavancin (01 July 2021) and for the publication of his clinical information and images (02 February 2024). The hospital board and pharmacy approved off-label use of dalbavancin on July 03rd, 2021.

References

1. De Vito A, Fiore V, Colpani A, Zauli B, Fanelli C, Tiseo G, et al. The current and future off-label uses of dalbavancin: A narrative review. Eur Rev Med Pharmacol Sci. 2023;27:1222-38.
2. Bai F, Mazzitelli M, Silvola S, Raumer F, Restelli U, Croce D, et al. Cost analysis of dalbavancin versus standard of care for the treatment of Acute Bacterial Skin and Skin Structure Infections (ABSSSIs) in two Italian hospitals. JAC Antimicrob Resist. 2023;5:dlad044.
3. Lueking R, Wei W, Mang NS, Ortwine JK, Meisner J. Evaluation of dalbavancin use on clinical outcomes, cost-savings, and adherence at a large safety net hospital. Microbiol Spectr. 2023;11:e0238522.
4. Taylor K, Williamson J, Luther V, Stone T, Johnson J, Gruss Z, et al. Evaluating the use of dalbavancin for off-label indications. Infect Dis Rep. 2022;14:266-72.
5. Mazzitelli M, Gatti M, Scaglione V, Mengato D, Trevenzoli M, Sattin A, et al. Off-label use of dalbavancin for sequential treatment of spondylodiscitis by methicillin-resistant *Staphylococcus aureus*: A retrospective single-centre experience. Antibiotics (Basel). 2022;11:1377.
6. Garcia R, Arenere M, Bonaga B, Allende MA, Frutos AJ, Salvador T, et al. Experience of real-life use of dalbavancin as an off-label treatment of complicated infectious diseases in a tertiary care hospital experience. Med Sci Forum. 2022;12:4.
7. Cojutti PG, Tedeschi S, Gatti M, Zamparini E, Meschiari M, Siega PD, et al. Population pharmacokinetic and pharmacodynamic analysis of dalbavancin for long-term treatment of subacute and/or chronic infectious diseases: The major role of therapeutic drug monitoring. Antibiotics (Basel). 2022;11:996.

8. Cojutti PG, Rinaldi M, Gatti M, Tedeschi S, Viale P, Pea F. Usefulness of therapeutic drug monitoring in estimating the duration of dalbavancin optimal target attainment in staphylococcal osteoarticular infections: A proof-of-concept. Inter J Antim Agen. 2021;58:106445.