





Case study: de novo vericiguat and intermittent levosimendan on top of optimal medical therapy in advanced heart failure patients as destination therapy

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KEYWORDS: advanced heart failure, levosimendan, vericiguat.

CITATION: *Cardiol Croat.* 2024;19(11-12):442. | <https://doi.org/10.15836/ccar2024.442>

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Introduction: Advanced heart failure (HF) patients, particularly those ineligible for heart transplantation (HT) or left ventricular assist devices (LVADs), remain at high risk for recurrent hospitalizations and mortality despite optimal medical therapy (OMT). Vericiguat, a soluble guanylate cyclase (sGC) stimulator, enhances myocardial and vascular function by increasing cyclic guanosine monophosphate (cGMP) production, while intermittent levosimendan, a calcium sensitizer with inotropic and vasodilatory properties, provides hemodynamic support. When added to OMT, both agents offer potential therapeutic benefits in stabilizing advanced HF through complementary mechanisms.¹⁻³

Patients and Methods: This retrospective study examined three patients with advanced heart failure with reduced ejection fraction (HFrEF) who received vericiguat and intermittent levosimendan in addition to OMT. The primary endpoint was a reduction in NT-proBNP levels over one year, reflecting HF severity. Secondary endpoints included improvements in left ventricular ejection fraction (LVEF), right ventricular function (TAPSE), and tricuspid regurgitation (TR) severity.

Results: After one year of combination therapy, all patients demonstrated significant reductions in NT-proBNP levels, indicating improvement in HF severity. Additionally, LVEF improved across patients, from a baseline of 25-30% to 35-40%. Improvements in TAPSE and TR severity reflected enhanced right ventricular function and reduced pressure load on the right side of the heart. These changes were associated with fewer hospitalizations, enhanced exercise tolerance, and an improved quality of life.

Conclusion: When added to OMT, vericiguat and intermittent levosimendan effectively improved multiple cardiac function parameters and reduced NT-proBNP levels in patients with advanced HFrEF. These findings suggest that this combination therapy could be a viable long-term option for patients ineligible for HT or MCS, with further research warranted to confirm these results in larger populations.

RECEIVED:
October 13, 2024

ACCEPTED:
October 31, 2024



LITERATURE

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