Landiolol for acute heart rate control in the cardiac intensive care unit: early experience from University Hospital Centre Zagreb

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Introduction: To report our center's initial experience with intravenous (IV) landiolol for acute heart rate control in critically ill cardiac patients, focusing on hemodynamic stability and tissue perfusion markers.

Patients and Methods: This retrospective study included all patients treated with IV landiolol in the Cardiac Intensive Care Unit (CICU) at the University Hospital Centre Zagreb between September 2024 and September 2025. Administrations separated by ≥24 hours were defined as distinct episodes. Baseline demographics and laboratory data were collected. During the first 24 h heart rate (HR), mean arterial pressure (MAP), vasoactive drugs, and urine output were recorded every 2 h when available. Categorical variables are presented as counts, and continuous variables as medians (minimum-maximum). Statistical significance was set at <0.05.

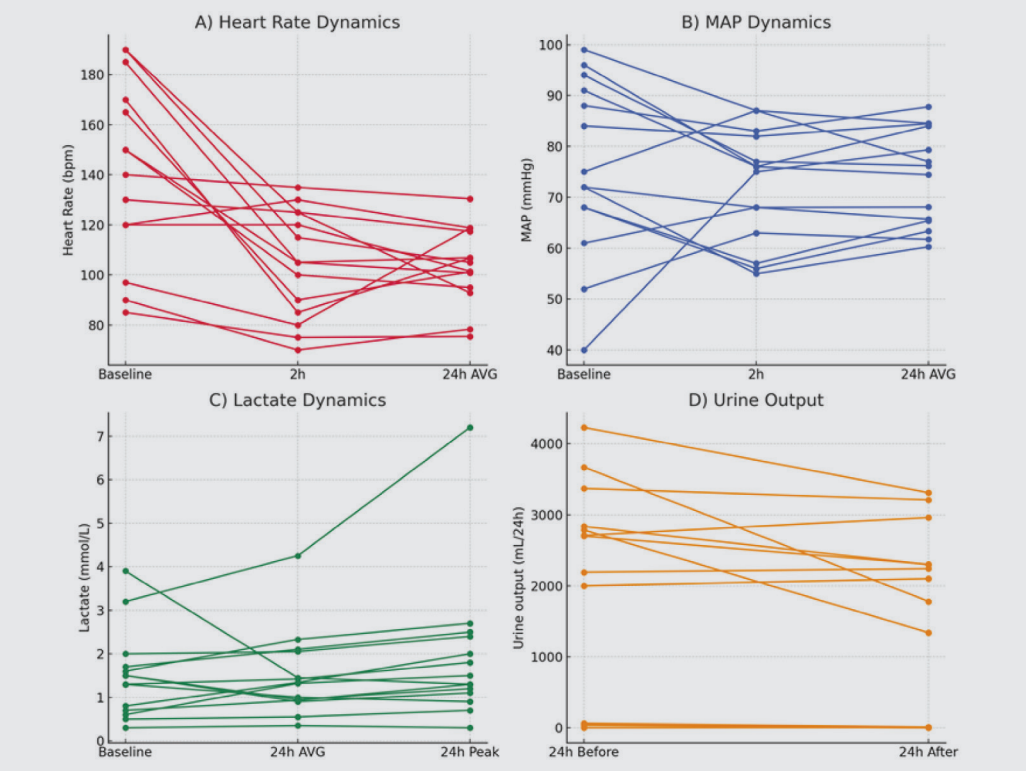

FIGURE 1. Hemodynamic and perfusion dynamics following landiolol initiation in 14 treatment episodes.
Bpm – beats per minute; AVG – average; MAP – mean arterial pressure

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Results: Ten patients (8 men; age 56 [31-81] years; BMI 25.4 [20.7-37.4] kg/m²) received landiolol, yielding 14 episodes (11 supraventricular tachyarrhythmias, 3 ventricular tachycardia). Cardiogenic shock occurred in 11 episodes, sepsis in 8, septic shock in 4, and mechanical circulatory support was required in 4. Landiolol was started at 18.5 (1–92) days after CICU admission, with a duration of 37.5 (6.8–634.9) h and mean dose 5.1 ± 3.4 µg/kg/min. HR decreased significantly at 2 h (145 [85–190] vs. 105 [70–135] bpm; p = 0.003) and over 24 h (103 [75–130]; p = 0.002). MAP remained stable (73.5 [40–99] vs. 75.5 [55–87] at 2 h, p = 0.22; 75.3 [60–88] 24 h/average, p = 0.27). Lactates showed no change (1.4 [0.3–3.9] vs. peak 1.4 [0.3–7.2]; p = 0.11). Urine output before and after initiation was 2700 [0–4230] vs. 2100 [0–3310] mL/24 h, p = 0.07 (**Figure 1**). No patients required vasoactive support at initiation, but 5/14 episodes required it during therapy, all in sepsis or septic shock.

Conclusions: In this initial single-centre experience since the national introduction of landiolol, the drug achieved rapid and sustained rate control in critically ill CICU patients, including those with cardiogenic shock and sepsis. HR reduction was not associated with MAP or lactate deterioration, while urine output before and after did not differ significantly. Landiolol may be a safe and effective option for rate control in the CICU, but larger studies are warranted.[1-3]

LITERATURE

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