

Levosimendan on severe low cardiac output in paediatric patients

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INTRODUCTION

Levosimendan is a myocyte calcium-channel sensitizer and it is an optional drug to treat severe low cardiac output (SLCO).

OBJECTIVE

To report the outcomes in patients (p) with SLCO receiving intravenous levosimendan as part of SLCO treatment strategy.

METHODS

Descriptive-retrospective and observational study of 25 patients with diagnosis of SLCO requiring IV levosimendan. Cardiogenic shock was diagnosed based on clinical finding, ECG, 2D echocardiography.

Central venous oxygen saturation (ScvO₂), arterial oxygen saturation (SaO₂), arterial-venous difference saturation (AV diff sat O₂), systemic oxygen extraction index (SO₂ ext index) were measured immediately before and 24 hs after intravenous levosimendan administration (loading dose 6 µg/kg/m - maintenance dose 0,1 µg/kg/m during 24hs).

RESULTS

25 p were enrolled between January 2006 to December 2009. Mean age was 3.0 years (1m-16y), 11 p were female and the mean weight was 12.0 kg (3.1-55). Diagnosis:

- 14 were post-op cardiovascular surgical patients (4 p TOF, 3 p AVC, 3 p d-TGA, 1 p TOF+AVC, 1 p modified Fontán-Kreutzer procedure, 1 p type B IAA, and 1 p TAPVD).
- 8 p had been diagnosed with acute myocarditis (5 p post scorpion poisoning, 1 p mycoplasma +, 1 p adenovirus + and 1 p without confirmed etiology).
- 2 p had dilated cardiomyopathy (1 p with end-stage myocarditis and 1 p with non compaction LV).
- 1 p with long QT syndrome with syncope.

After levosimendan administration, all p showed.

Variable	Pre	Post
HR (beats/min)	175 (r: 155-210)	150 (r: 123-170)
BP (mmHg)	48 (r: 35-70)	60 (r: 50-77)
LV shortening fraction (%)	11 (r: non-detectable-22)	23 (r: 14-25).
SvcO ₂ (%)	59 (r: 45-60)	71 (r: 58-79).
AV diff sat O ₂ (%)	42	31
SO ₂ ext index	0.42	0.31

All these variables showed a significant statistical difference with $p < 0,001$. 4/25 p (16%) died (2 p belonging to the post-op group, 1 p post scorpion poisoning and 1 p with long QT syndrome).

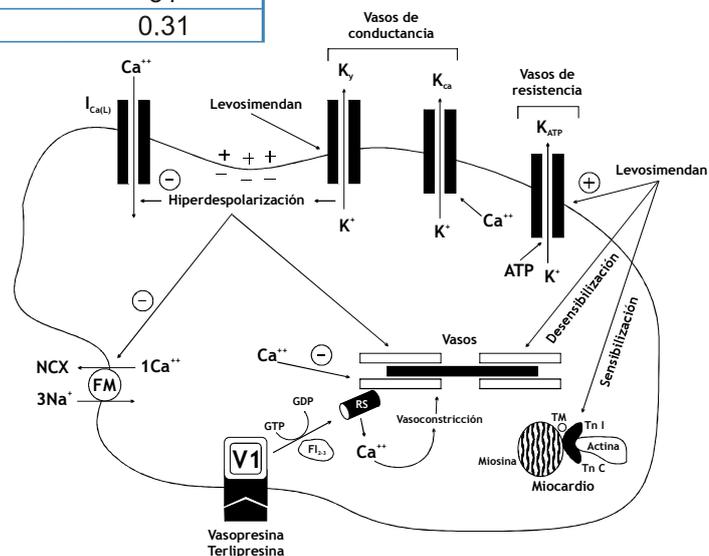


Figure 1: Action mechanisms.

CONCLUSIONS

In our experience, levosimendan administration in pediatric patients suffering SLCO is a safe and effective treatment option with favorable outcomes.