

Levosimendan in newborns and infants (perioperative cases excluded) – single centred study.

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Introduction: Levosimendan is calcium-sensitizing inodilator, which improves cardiomyocytes contractility without increasing oxygen consumption. There is limited experience in the use of levosimendan in children – especially in newborns and infants. Available studies on the use of levosimendan in the pediatric population concern mainly on perioperative treatment, several have endorsed possible benefits of repetitive levosimendan infusion as bridging to heart transplant. This approach is particular important in newborns and infants with refractory ventricular dysfunction, due to shortage of pediatric heart donors, contraindications and higher risks of mechanical assist devices in this group.

Methods: Retrospective analysis of clinical and echocardiographic data, laboratory studies, of all newborns and infants with decompensated heart failure who received levosimendan infusion between December 2016 - October 2018. Exclusion criteria was perioperative levosimendan administration.

Materials: A total of 11 patients were included in the study (9 males - 82%). Diagnosis: severe aortic stenosis – 5 (45,5%); dilated cardiomyopathy (DCM) – 3 (27,2%); HLHS - 2 (18,2%), TGA, LVOTO, VSD - 1 (9,1%). The median age at the levosimendan infusion was 2,5 months (50 days) (range 4 hours – 1 year). Two patients received 2 infusions.

Results: At the moment of levosimendan administration in ICU, 11 patients were receiving complex, conventional treatment without expected response. Tolerance of levosimendan in all patients was good. None of severe adverse effects appeared during the infusions. An overall improvement was observed in 7 cases (63,6%), which led to reduction, then withdrawal of previous inotropic and concomitant treatment, and eventually discharge from ICU. In 4 patients (36,4%) after several days of stabilization, deterioration of general condition had occurred. 1 death was reported due to progression of multi organ failure (DCM patient, 54 days after levosimend infusion).

Conclusion: Levosimendan infusion appears to be effective and safe in significant group of newborns and infants with decompensated heart failure, especially when conventional therapy is not sufficient to maintain stable hemodynamics. However designed studies on the usage of levosimendan on larger pediatric population are necessary.