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Is oral enoximone a safe alternative to protracted intravenous medication in severe myocardial failure in children?

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Introduction: Prolonged severe myocardial dysfunction presents difficult therapeutic challenges in the paediatric population. Intravenous phosphodiesterase 3 inhibitors have proven to be a valuable and successful therapy in paediatric patients with acute or chronic myocardial dysfunction over the last two decades. Unfortunately there is no specific oral preparation available. Continuous intravenous administration is associated with risk of infection and considerable patient discomfort. Weaning from intravenous medication to more commonly used oral Angiotensin-Converting Enzyme (ACE) inhibitors and beta-blockers can be challenging and poorly tolerated. We examined our experience with using the intravenous preparation of enoximone as an oral medication in this setting.

Methods: We reviewed retrospectively hospital records of 23 patients receiving oral enoximone in a single tertiary paediatric cardiac centre between November 2005 and December 2010.

Results: Patient age at start of oral enoximone was 1-173 months (median 8 months). Three patients (15%) had left ventricular dysfunction due to myocarditis or cardiomyopathy. Twenty patients (85%) had myocardial dysfunction complicating congenital heart disease, 19 (90%) following cardiac surgery. Of this latter group 9 (45%) had left ventricular dysfunction, 8 (40%) had right ventricular dysfunction and 3 (15%) had biventricular failure.
Indications for oral enoximone were inability to wean from intravenous milrinone infusion and/or intolerance of ACE inhibitor therapy. All patients received oral enoximone at 1mg/kg 3 times/day. Enoximone was well tolerated at this dose without adverse haemodynamic effect. Due to alkaline nature of this solution there were 2 (8%) patients with blood stained gastric content aspirates when enoximone was administered without milk, which subsequently resolved when given with milk. No other adverse effects were encountered and the families tolerated well the inconvenience of using an intravenous preparation with the need for refrigerated storage. Results of outcome data analysis will be presented.

Conclusions: Oral enoximone is a safe alternative to protracted intravenous treatment of severe myocardial failure in children. Based on our experience it is a well tolerated and promising alternative when ACE inhibitors and beta-blockers are not tolerated. The development of a licensed oral preparation would be welcomed.