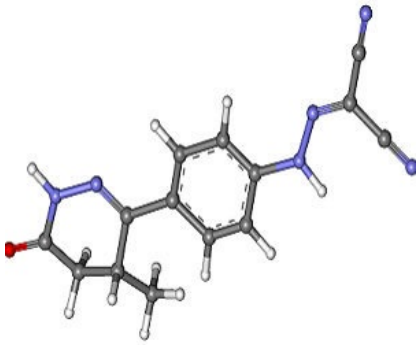
ICU
MANAGEMENT & PRACTICE

Levosimendan for Haemodynamic Support after Cardiac Surgery



In patients who required perioperative hemodynamic support after cardiac surgery, low-dose levosimendan in addition to standard care did not result in lower 30-day mortality than placebo, according to a multicentre study published in The New England Journal of Medicine.

See Also: Categorisation of Survival and Death after Cardiac Arrest

Every year, more than one million patients undergo cardiac surgery in the United States and Europe. Acute left ventricular dysfunction is a major complication of cardiac surgery and is associated with increased mortality. Inotropic drugs (catecholamines and phosphodiesterase type 3 [PDE-3] inhibitors) are the cornerstone of postoperative haemodynamic support. Meta-analyses of small trials suggest that levosimendan, an inotropic agent, may result in a higher rate of survival among patients undergoing cardiac surgery.

Considering the pharmacologic properties of levosimendan (increase in cardiac output with little increase in myocardial oxygen consumption) and the results of previous studies, researchers hypothesised that the administration of levosimendan, in addition to standard treatment, might result in lower mortality in this context. They conducted a randomised, double-blind, placebo-controlled trial involving patients in whom perioperative haemodynamic support was indicated after cardiac surgery, according to prespecified criteria. The trial was conducted at 14 centres in Italy, Russia and Brazil.

The trial was stopped for futility after 506 patients were enrolled. A total of 248 patients were assigned to receive levosimendan and 258 to receive placebo. There was no significant difference in 30-day mortality between the levosimendan group and the placebo group (32 patients [12.9%] and 33 patients [12.8%], respectively; absolute risk difference, 0.1 percentage points; 95% confidence interval [CI], −5.7 to 5.9; P=0.97). In addition, there were no significant differences between the two groups in the durations of mechanical ventilation, hospital stay and in rates of hypotension or cardiac arrhythmias.

The findings do not support the administration of levosimendan, in addition to standard care, in the management of cardiac dysfunction after cardiac surgery, according to researchers.

They add, "Our trial differs from previous trials in cardiac surgery, which mostly investigated the use of levosimendan in patients undergoing coronary-artery bypass grafting (CABG). Less than half our patients underwent CABG, and a similar proportion underwent mitral-valve surgery. Thus, it is possible that perioperative cardiovascular dysfunction may have different pathophysiological features in these patients and hence result in a different response to levosimendan. However, in a prespecified

subgroup analysis, we found no influence of the type of surgery on outcome."

Source: The New England Journal of Medicine
Image Credit: Marina Vladivostok

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