BACKGROUND

Glutamate is an important substrate for the intermediary metabolism of the heart, particularly in association with ischemia. In animal models, glutamate has been shown to protect the heart from ischemia and to facilitate metabolic and hemodynamic recovery after ischemia.

Adverse outcome in CABG is closely related to postoperative heart failure precipitated by ischemia and myocardial infarction. Based on encouraging clinical experience with intravenous glutamate infusion in high-risk CABG the GLUTAMICS-trial was initiated.

RESULTS

GLUTAMICS-trial (n=861)

There was no difference in the primary endpoint between the groups. Significantly fewer patients in the glutamate group were hemodynamically unstable or in need of intra-aortic balloon pump at completion of surgery (Table 2).

No significant differences were found regarding stroke, renal failure, atrial fibrillation or markers of myocardial injury.

No significant differences were found regarding serious or non-serious adverse events.

AIMS

To investigate intravenous glutamate infusion given in association with CABG for acute coronary syndrome can reduce mortality and prevent or mitigate myocardial injury and postoperative heart failure.

GLUTAMICS - trial: GLUTAMICS - GLUTAMIC for Metabolic Intervention in Coronary Surgery

Investigator initiated clinical Phase III trial on 861 patients undergoing CABG for acute coronary syndrome between October 4, 2005 and November 12, 2009 in three Swedish Cardiac Surgery Centers. External monitoring and reporting of adverse events according to Good Clinical Practice standard.

Adverse outcome in CABG is closely related to postoperative heart failure precipitated by ischemia and myocardial infarction.

In the current study, glutamate infusion was independently associated with a reduced risk of severe circulatory failure according to prespecified criteria.

The results are compatible with a beneficial effect of glutamate on myocardial recovery.

Intravenous glutamate infusion could provide a novel and important way of promoting myocardial recovery after ischemic injury.

ACRONYMS AND DEFINITIONS

GLUTAMICS - GLUTAMIC for Metabolic Intervention in Coronary Surgery

1. Severe circulatory failure was defined as heart failure leading to death or requiring ICU stay ≥ 48 hours with intra-aortic balloon pump in bedside or in need of IABP.

2. Unstable hemodynamic state despite isotropic drugs or in need of IABP.

3. IABP: Intra-aortic balloon pump

4. LITA: Left Internal Thoracic Artery

5. CPB: Cardiopulmonary Bypass

CONCLUSION

The results are compatible with a beneficial effect of glutamate on myocardial recovery.

Intravenous glutamate infusion could provide a novel and important way of promoting myocardial recovery after ischemic injury.

Adverse outcome in CABG is closely related to postoperative heart failure precipitated by ischemia and myocardial infarction.