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Myocardial protection during reperfusion in patients with acute coronary syndrome with ST segment elevation submitted to primary angioplasty: effect of intracoronary adenosine on infarct size and remodeling.

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Intracoronary injection of adenosine before reperfusion in patients with ST-segment elevation myocardial infarction: A randomized controlled clinical trial

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SUMMARY OF RESULTS:

Background & Aims

The effect of intracoronary adenosine (ADO) on ST-segment elevation myocardial infarction (STEMI) size and adverse remodeling is not well established.

Methods

In a double-blind trial, 201 patients with STEMI were randomized to receive percutaneous coronary intervention (PCI) within 6 hours of symptom onset, 4.5mg ADO or saline immediately prior to reperfusion. Primary end-point: percentage of total myocardial necrotic mass by cardiac magnetic resonance (CMR) 2-7 days post-reperfusion. Secondary end-points: changes in left ventricular volumes and ejection fraction (LVEF) at baseline and at 6 months.

Results

Baseline CMR could not be performed in 20 patients. Overall, no significant differences were observed between ADO and placebo regarding infarct size (20.8% vs. 22.5%; $p=0.40$). However, infarct size was significantly reduced (19.4% vs. 25.7%; p for interaction=0.031) in those with ischemia duration below the median (200 min). CMR at 6 months, performed in 138 patients, did not show statistically significant differences between groups in the rate of LVEF increase (3.3 units (SD 9.6) in ADO group vs. 1.5 units (SD 9) in placebo group; $p=0.25$). In the subgroup analysis, among patients with ischemia time below 200 min, the increase in LVEF was slightly higher with ADO (3.59% vs. 0.43%; p for interaction=0.06).

Conclusions

Although our study failed to demonstrate that intracoronary administration of ADO prior to PCI limits infarct size, in patients receiving early PCI ADO might enhance myocardial salvage and has a favorable effect on LVEF evolution, which may help to reconcile apparently contradictory results of previous studies.

Flow diagram of participants in the study:

