No effect of O_2 therapy on myocardial salvage in ST elevation myocardial infarction treated with primary percutaneous coronary intervention –The Supplemental Oxygen in Catheterized Coronary Emergency Reperfusion (SOCCER) study

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Abstract

Background

Oxygen has for a long time been used in the treatment of acute myocardial infarction. Recent studies suggest however, that administration of O_2 in patients with acute myocardial ischemia may have negative effects.

Objectives

Our aim was to evaluate the effects of supplemental O_2 in patients with ST-elevation myocardial infarction accepted for acute percutaneous coronary intervention (PCI). The primary endpoint was myocardial salvage index (MSI) assessed by cardiac magnetic resonance imaging (CMR), and secondary endpoints included infarct size (IS) and myocardium at risk (MaR).

Methods

This was a randomised controlled trial at two university hospitals in Sweden. STEMI patients with a blood O_2 saturation ≥94% were randomized in the ambulance to be given either supplemental O_2 (10 L/min) or room air via an OxyMask^{TM} until the conclusion of the coronary angiography. Patients were blinded to the study intervention. CMR was performed 2-6 days after the inclusion.

Results

At inclusion, the O_2 (n=46) and air (n=50) groups had similar patient characteristics. There were no significant differences in MaR (31.9 ± 10.0% of the left ventricle in the O_2 group vs 29.6 ± 12.0% in the air group), MSI (53.9 ± 25.1% vs 49.2 ± 23.7%), or IS (15.6 ± 10.4% vs 15.8 ± 11.0%).

Conclusions

In STEMI patients undergoing acute PCI, we found no effect of high-flow oxygen compared to room air on the size of ischemia before PCI, myocardial salvage, and the resulting infarct size. These results support the safety of withholding supplemental oxygen in normoxic and stable STEMI patients.