

New method of intra-arrest trans-nasal cooling in Stockholm - The PRINCE II study

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Introduction:

Trans-nasal cooling during resuscitation has been shown to improve survival in porcine models of prolonged cardiac arrest. The feasibility and benefit of intra-arrest trans-nasal cooling was recently investigated in a multicenter randomized trial (PRINCE I) but results have not yet been published.

Aim:

To determine the impact on ROSC and outcome of the addition of intra-arrest trans-nasal cooling to hospital-based cooling alone in a single Scandinavian center.

Method:

Patients in witnessed cardiac arrest with treatment interval < 20 min were randomized to prehospital intra-arrest cooling versus standard ACLS care. Trans-nasal cooling (Rhinochill device, Benechill Inc.) was initiated using a mixture of volatile coolant plus oxygen delivered into nasopharynx for rapid evaporative heat transfer. Prehospital cooling was initiated during ongoing CPR. All patients were cooled at hospital.

Results:

100 patients will be included. Fifteen patients have been randomized to date. Patients randomized to intra-arrest cooling (n=7) or standard care (n=8) had similar demographics, initial rhythms, bystander CPR rates, time from collapse to CPR and ALS arrival. Time from collapse to cooling initiation was 26 minutes. Among treated patients 6 / 7 (86%) achieved ROSC and were admitted to ICU. Two of 7 survived to hospital discharge (28%). In the control group none (0/8) has achieved ROSC. No adverse effects have occurred in treated patients.

Conclusion:

Trans-nasal cooling seems to be safe and feasible in a prehospital setting. Initial data indicate that trans-nasal evaporative cooling in witnessed cardiac arrest patients may improve ROSC rate as well as survival to hospital discharge.