Conclusions: Evaluation of novel cerebral resuscitation potentials should not be taken from rat data indirectly to patient trials without systematic evaluation of risks and benefits in reproducible outcome models in a large species.

199
Mild Cerebral Hypothermia after Cardiac Arrest Mitigates Brain Damage in Dogs

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Objective: To summarize the results of a logical sequence of four cardiac-arrest outcome studies.
Methods: The standardized ventricular fibrillations (VF) 10 or 12.5 min (no-flow) outcome models in dogs were used. In studies #1, #3 and #4, reperfusion was with brief cardiopulmonary bypass (CPB). In study #2, reperfusion was with external CPR. The use of intermittent positive pressure breathing (IPPV) was to 20 h and intensive care with outcome evaluation to 72 or 96 h. Outcome was determined as overall performance, neurologic deficit, and brain histologic damage scores. Mild hypothermia (34°C) was induced from reperfusion to 1–2 h; in study #2, a combination of external cooling methods was started after restoration of spontaneous normotension.
Results: In all four studies, cerebral functional and morphologic outcomes were significantly better in the mild hypothermia groups compared with normothermic concurrent controls. Mild hypothermia was more beneficial than was post-arrest moderate (30°C) or deep hypothermia (15°C), which worsened cardio-vascular variables. When start of cooling was delayed by 15 min after reperfusion, histologic but not functional improvement occurred.
Conclusions: These dog data and others' rat data justify clinical development and evaluation of rapid mild brain cooling methods for use in EMS and hospitals.

200
Mild Protective and Resuscitative Cerebral Hypothermia Improves Outcome after Asphyxial Cardiac Arrest in a New Rat Model

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Objective: To explore in cardiac arrest (CA) the ability of mild hypothermia (Hth), tympanic temperature (Tty) 34°C, for protection (cooling before the insult) or resuscitation (cooling after restoration of spontaneous circulation (ROSC), to improve functional and morphologic cerebral outcome in this rat model of eight minutes (min) asphyxiation, to thereby confirm that the model's insult is in the treatable range.
Methods: Twenty-seven rats were randomized into normothermic control Group A (n = 10), resuscitative Hth Group B (n = 9), and protective Hth Group C (n = 8). Cooling was by external means. After eight min asphyxiation (CA 5 min), return of spontaneous circulation (ROSC) was with external CPR, epinephrine intravenous (IV), $NaHCO_3$ IV, and intermittent positive pressure ventilation (IPPV) to one hour (h). Evaluation to 72 h was in terms of neurologic deficit scores (NDS 0–100%), overall performance categories (OPC, 1–5), and whole brain histopathologic damage scores (of at least four coronal slides).
Results: The NDSs were lower (better) in Groups B and C compared with Group A ($p < .05$). Compared with Group A, OPCs were better numerically in group B and significantly better ($p < .05$) in Group C. Total ($p < .05$) and regional (numerical) histologic damage score were lower in Group C and correlated with ND (r = 0.83) and OPC (r = 0.79).
Conclusions: This rat model, with eight-minute asphyxiation (CA 5 min), is suitable for treatment trials as it responds to protective mild hypothermia. Mild resuscitative cerebral hypothermia in rats seems to improve outcome not only in models with incomplete forebrain ischemia (as shown by others previously), but also in a model of total body circulatory arrest.

201
Cardiogenic Shock and Multiple-Organ Failure

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Introduction: Multiple-organ failure (MOF) is becoming one of the most important problems during anti-shock therapy of patients suffering from cardiogenic shock. Cardiogenic shock (CGS) was studied and its prognosis was evaluated.
Methods: All patients who were admitted to the emergency center with cardiovascular disease from 1 January 1991 through 31 December 1992 were studied.
Results: The total number of patients studied was 301. Of 301 patients, 30 were found to have cardiogenic shock. They con-