Therapeutic Hypothermia to Protect the Brain and the Heart

The clinical use of therapeutic hypothermia and temperature management to prevent or reduce neurological injury is gaining interest and is increasingly used throughout the world. In the experimental setting, the protective effect of hypothermia after tissue injury seems to be applicable to many different tissues. In the clinical setting, however, it has been difficult to prove a beneficial effect of therapeutic hypothermia in other organs than the brain. There is an ongoing NIH-sponsored study, investigating the protective effect of therapeutic hypothermia for myocardial infarction and yet another study for myocardial infarction complicated with shock (www.clinicaltrials.gov). Other hot topics are the beneficial effect of hypothermia on cardiac function and whether hypothermia during cardiopulmonary resuscitation actually improves the rate of return of spontaneous circulation (ROSC) as stipulated by some; this is currently investigated in clinical trials.

The use of therapeutic hypothermia after cardiac arrest is considered standard care in many countries and the implementation rate is especially high and close to 100% in the Nordic countries and in the Netherlands. In large clinical centres, such as Pittsburgh (PA, USA), implementation rate has increased from a few percent in 2004 to over 80% of eligible patients in 2009 (P. Kochanek, personal communication).

Hypoxic ischaemic encephalopathy (HIE) in neonates is the other indication where randomised trials have shown solid evidence that therapeutic hypothermia is protective. Furthermore, there are ongoing and planned clinical trials that address the use of therapeutic hypothermia in traumatic brain injury (TBI), in spite of earlier equivocal reports. Regarding treatment of stroke with therapeutic hypothermia, randomised trials will reveal whether this treatment is effective in clinical practice. All these topics and more will be addressed at The 3rd International Hypothermia Symposium, to be held in Lund, Sweden from September 2-5, 2009.

The faculty consists of more than 40 renowned clinicians and researchers, covering all areas of molecular and experimental hypothermia research and clinical trials for hypothermic protection in the heart and the brain. The conference participants will be provided with the most recent data from the world's leading experts in the field of therapeutic hypothermia. Mechanisms of hypothermic tissue protection will be discussed and current concepts will be challenged. The results from clinical trials will be presented. New technology and novel cooling methods will be discussed. There will be ample time for poster presentations and discussions. A pre-conference workshop (Sept 1) will address the increasingly difficult topic of how to prognosticate after cardiac arrest.

The topics of the conference are:
• The Physiology of Hypothermia: How does hypothermia affect body homeostasis?
• Molecular Mechanisms of Hypothermic Tissue Protection.
• Cardiac Ischaemia and Resuscitation: Mechanical compressions and hypothermia during CPR and the effect of hypothermia on post cardiac arrest myocardial function.
• Cardiac Arrest: How and when should we cool, results from a RCT. A report from the 2000-patient database "The International Cardiac Arrest Registry" (INTCAR).
• Hypoxic Ischaemic Encephalopathy (HIE) in Neonates: A Clinical Update. Xenon-induced hypothermia in long term surviving newborn models.
• Prognostication after Cardiac Arrest: Preliminary results from the PROPAC II study. Continuos aEEG and multimodal strategies for prediction of outcome.
• Traumatic Brain and Spinal Cord Injury: Recent Clinical Trials in TBI. Results from experimental studies and planned clinical trials in spinal cord injury.
• Stroke and Neurointensive Care: The ICTuS-L trial. The EuroCools trial.
• New Devices and Chemical Hypothermia.

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