

# CARDIOVASCULAR NEWS



## Quebec institutions unite to fight the leading cause of infant mortality

As part of a strategic initiative by the Canadian Institutes of Health Research (CIHR), a \$2.5-million research grant has been awarded to a unique multidisciplinary project, coordinated by the Centre hospitalier universitaire Sainte-Justine, that brought together the McGill University Health Center Montreal Children's Hospital, the Institut de recherches cliniques de Montréal and the Montreal Heart Institute. The study investigated the genetic determinants of congenital heart disease, which is the leading cause of death in Quebec children under the age of one.

"The objective of the five-year research project [was] to identify the genes at the root of cardiac malformations. The study results will help health professionals target medical therapies and prevent infant congenital heart disease. It will also allow us to work on problems before they occur, rather than simply repairing defective plumbing," explained Dr. Gregor Andelfinger, Canada's leading pediatric specialist in cardiovascular genetics. He is also one of the project's main researchers.

### An ambitious project

According to Dr. Andelfinger, the CIHR grant will allow the team to study the significance of genetic factors in the appearance of pathologies using three complementary approaches:

- 1) Search for new genes responsible for heart malformations, especially diseases causing obstruction of the left heart
- 2) Study of the interaction between the genes and the

environment, especially nutrition factors in pregnant women

- 3) Study of the influence of genetic factors on the evolution of cardiac disease, especially in Tetralogy of Fallot, a problem that affects about 10 % of all congenital cardiopathies

Heart malformations affect one to two per cent of children and account for 25% of all congenital malformations in humans. These diseases represent the largest category of congenital abnormalities and the leading cause of death in children under the age of one (1:1000 will need surgery).

The researchers had access to the Sainte-Justine database of over 18,000 cases going back over 20 years. This extensive study also drew from the support of all Quebec pediatric cardiologists, as well as adult cardiologists who specialize in congenital malformations. In fact, the entire university community in Quebec was involved in the project.

This operating grant will contribute to the financial support for projects that will close the gap between clinical research and basic scientific research by targeting an important human development problem.

The grant was awarded in collaboration with the Heart and Stroke Foundation of Canada. Besides its originality and scientific importance, the project was chosen because of the unique complementarity of its members'

## Induced hypothermia should be standard of care, says ER doctor

In a new position-statement from the Canadian Association of Emergency Physicians, Kingston General Hospital's, Dr. Dan Howes says patients who receive therapeutic hypothermia following a cardiac arrest are more likely to have better neurological outcomes than those who do not. Dr. Howes leads a group of emergency physicians, critical care specialists, cardiologists and neurologists whose recommendations appear in the March issue of the Canadian Journal of Emergency Medicine.

"This therapy is not just about saving a life, but trying to bring a patient back as the same person they were before the cardiac arrest," says Dr. Howes. "There is enough evidence and consensus among the experts for this to become a recommended treatment. Therapeutic hypothermia is a simple and inexpensive therapy with impressive results. It has a greater effect than any other treatment currently available for this group of patients."

Therapeutic hypothermia is recommended for cardiac patients who have been resuscitated, but are still unconscious. They are cooled to a core temperature of 33 C, for a period of 24 hours in order to protect the brain.

"While the exact mechanism for the benefit of this therapy is unknown, cooler temperatures seem to slow down the activity of the cells of the brain during a time when they are vulnerable to injury. This protection is critical as the brain can continue to sustain injury even after oxygen has returned," Dr. Howes said. "There is quite a significant amount of damage not just after the oxygen has been cut off, but when the blood begins to come back to the organs."

Dr. Howes claims that "induced hypothermia is about

as simple a procedure there is. A patient's body temperature is lowered using cold saline, ice packs and other specialized cooling devices as soon as the situation allows. Cooling can take anywhere from one-and-a-half to six hours. Patients are given temporary paralytic agents and sedation to prevent discomfort and shivering, which can elevate body temperature. Patients remain in a hypothermic state for about 24 hours, at which time they are slowly returned to normal body temperatures using warming blankets, a process that takes four to six hours."

"The science may be low-tech, but the results are definitive," says Dr. Howes. He goes on to explain that hypothermia therapy has recently been implemented around the world. At KGH, cooling therapy has been used on about 30 patients over the past three years. Based on published success rates, four of these patients survived who would have otherwise died and the survivors suffered less brain damage than they would have without this new therapy.

Dr. Howes is very enthusiastic about the procedure; "This is such an easy thing to do. You don't need a special drug and it doesn't cost a lot of money. It uses supplies already on hand in every hospital across the country...we want doctors to know about this and what a big difference it makes." It's important to note that not all patients who undergo the cooling therapy will regain consciousness but, Dr. Howes claims that "hypothermic therapy shows more promise than any other treatment currently available."

Induced Hypothermia Should Be Standard of Care: Cooler Temperatures Result in Better Brain Function Following Cardiac Arrest. By Karen Smith, Public Affairs Specialist, Kingston General Hospital, Kingston, Ontario. March 20, 2006.