Medical Xpress

How can you heal a broken heart?

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Some patients with heart muscles seriously affected by coronary heart disease may soon be able to benefit from an innovative treatment. Researchers at the Research Centre of the Centre hospitalier de l'Université de Montréal (CRCHUM), in collaboration with the Maisonneuve-Rosemont Hospital (MRH) are evaluating the safety, feasibility and efficacy of injecting stem cells into the hearts of patients while they are undergoing coronary bypass surgery. These stem cells could improve healing of the heart and its function.

The IMPACT-CABG (implantation of autologous CD133+ stem cells in patients undergoing coronary artery bypass grafting) protocol evaluates this experimental procedure, which is destined for patients suffering from ischemic heart disease, in which the blood supply to the heart is decreased and associated with heart failure. These patients undergo open-heart coronary bypass surgery, performed by the medical team to improve perfusion of the heart muscle. A few weeks ago, the first patient received progenitor CD133+ stem cells isolated from his bone marrow and enriched at the Cell Therapy Laboratory of the MRH, and has been doing very well ever since. Already, improvement has been noted in the contraction capacity of his heart, which has improved its ability to pump blood.

Objective of the intervention

The IMPACT-CABG study targets a group of patients who suffer heart muscle failure due to coronary heart disease. The goal is to add another treatment option to coronary bypass to promote healing and regeneration

of the damaged heart muscle. This new procedure is less invasive and less expensive than heart transplant, the only treatment now available for patients with severe heart failure. The researchers plan to recruit a total of 20 patients throughout Québec in the first phase. A second Canadian centre, at the General Hospital of the University of Toronto, will also take part in the trial. In 2007, the CRCHUM, in collaboration with the MRH, began the COMPARE-AMI clinical trial, to evaluate the safety and feasibility of intramyocardial injection of stem cells (injecting them into the heart through a catheter) in a different group of patients who have suffered their first infarction.

A Canadian first

Before the IMPACT-CABG trial, previous studies in other countries had also evaluated the safety and feasibility of injecting different stem cells in the hearts of patients with cardiac dysfunction. This is a first study in Canada evaluating intramyocardial injection of stem cells. "Also, no research team in the country had implemented such a complete treatment process, going from harvesting stem cells in the patient, treating them, and injecting them directly into the myocardium," states Dr. Nicolas Noiseux, cardiac surgeon at the CHUM and principal investigator in the study. "Moreover, the methods used to evaluate the recovery of heart function make use of cutting-edge imaging techniques," reports Dr. Samer Mansour, cardiologist at the CHUM, principal co-investigator.

To prepare for the intervention, cells from the bone marrow harvested at the CHUM are transferred to the cell therapy laboratory of the MRH to isolate the most immature stem cells, which will be injected directly into the patient's heart. "MRH has developed a unique expertise in cellular therapy. This expertise serves cardiology in those specific cases and we hope to develop other applications to regenerate the cornea, cartilage and other tissues and organs," adds Dr. Denis Claude Roy, haematologist,

Director of research and Director, Cell therapy Laboratory at MRH, and also a principal co-investigator.

More information: Reference to the protocol: clinicaltrials.gov/ct2/show/NC … 617?term=impact-cabg

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