

# Stem cells to repair damaged heart muscle

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In the first trial of its kind in the world, 60 patients who have recently suffered a major heart attack will be injected with selected stem cells from their own bone marrow during routine coronary bypass surgery.

The Bristol trial will test whether the stem cells will repair heart muscle cells damaged by the heart attack, by preventing late scar formation and hence impaired heart contraction.

Dr Raimondo Ascione from the University of Bristol and colleagues at the Bristol Heart Institute (BHI), based in the Bristol Royal Infirmary, have been awarded a grant of £210,000 from the British Heart Foundation (BHF) to conduct the clinical trial.

Professor Jeremy Pearson, Associate Medical Director of the BHF, said: "We hope that this exciting Bristol project will provide information taking us a step nearer to the day when stem cells can be used routinely to help repair damaged hearts."

In a heart attack, part of the heart muscle loses its blood supply (usually due to furring up of the arteries with fatty material) and cells in that part of the heart die, leaving a scar. This reduces the ability of the heart to pump blood around the body.

While the blood supply to the heart can be improved with coronary bypass surgery or angioplasty, thereby reducing the risk of further heart attacks, these techniques do not restore the viability and function of the area already damaged.

In 3-6 months after surgery, 20 per cent of patients develop a thinning of the walls of the heart, which in its most extreme form, can lead to congestive heart failure.

Dr Raimondo Ascione, Consultant Cardiac Surgeon, said: "I am very grateful to the British Heart Foundation for funding this important trial; the first of its kind worldwide. We have elected to use a very promising stem cell type selected from

the patient's own bone marrow. This approach ensures no risk of rejection or infection. It also gets around the ethical issues that would result from use of stem cells from embryonic or foetal tissue.

"Current treatments aim to keep the patient alive with a heart that is working less efficiently than before the heart attack. Cardiac stem cell therapy aims to repair the damaged heart as it has the potential to replace the damaged tissue."

In this trial (known as TransACT), all patients will have bone marrow harvested before their heart operation. Then either stem cells from their own bone marrow or a placebo will be injected into the patients' damaged hearts during routine coronary bypass surgery. The feasibility and safety of this technique has already been demonstrated.

As a result of the chosen double blind placebo-controlled design, neither the patients nor the surgeon knows whether the patient is going to be injected with stem cells or placebo. This ensures that results are not biased in any way, and is the most powerful way to prove whether or not the new treatment is effective.

Source: University of Bristol

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