Largest ever heart stem cell studies get underway

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Two linked clinical studies that will show whether stem cell therapy can save the lives of heart attack patients are now underway in London, following the award of €11.7 million funding from the European Commission.

Professor Anthony Mathur (Queen Mary, University of London and Barts and the London NIHR Cardiovascular Biomedical Research unit) and Professor John Martin (UCL and University College Hospitals NHS Foundation Trust) have received the combined funding to establish the two international trials, which will be led by their respective institutions in London.

The first study (BAMI) is a definitive 3,000 patient trial that will involve patients having their own stem cells taken from their bone marrow and injected into their heart within five days of suffering a heart attack. This trial is an expansion of a smaller clinical study performed at Barts and UCLH that demonstrated the safety of this technique. BAMI is much larger, involving 21 partners in 11 European countries. The results will be announced in five years and will demonstrate whether this treatment saves lives.

The second study (BIOMAGSCAR) involves eight partners in five countries and aims to build a new lining of the artery in the heart after heart attack by using a novel stent. Stents are artificial tubes inserted into a natural passage in the body to prevent or ease constricted blood flow. This new stent is magnetised and designed to dissolve once it has

attracted the patient's own stem cells to create a new lining of the artery.

Commenting on the BAMI trial, the Chief Investigator Professor Mathur said: "This is the first study that will allow us to measure whether stem cell therapy means the difference between life and death for heart attack patients. A number of smaller trials have already shown promising results by restoring cardiac function in heart disease patients by using adult stem cells to replace damaged heart cells. Now we want to take research to the next level and measure the two-year survival rate following stem cell injections.

"We hope to prove that stem cell injections will reduce the number of people dying from heart attacks by 25% across Europe. After 15 years of research in the stem cell field this is the next step and could lead to life-saving treatments for millions of heart patients."

Commenting on the BIOMAGSCAR trial, Professor Martin said: "Over 1.5 million stents per year are currently used in Europe and although they have improved patient outcomes, stents still fail.

"The novel concept we propose is the use of a biodegradable magnetisedstent with the ability to attract the patient's own stem cells, which have been 'tagged' with iron nanoparticles. The cells will then multiply and form a new artery lining. We believe this technology could save over 66,000 people from unnecessary suffering, as well as saving the European healthcare system €275 million a year.

"We hope that both these new trials will offer new hope to sufferers of heart disease, a condition that affects more than 50% of the population during their lifetime."

Professor Mathur and Professor Martin already lead three other clinical trials of stem cells in the heart which are funded by the Heart Cells

Foundation, the UK Stem Cell Foundation and the charitable foundation of Barts and the London NHS Trust. The new trials announced today are much larger in size and scope, building on their previous work in this field.

Provided by Queen Mary, University of London