

Can stem cells heal damaged hearts? No easy answers, but some signs of hope

October 8 2008

Recent studies indicate that infusing hearts with stem cells taken from bone marrow could improve cardiac function after myocardial infarction (tissue damage that results from a heart attack). But in a recent systematic review, Cochrane Researchers concluded that more clinical trials are needed to assess the effectiveness of stem cell therapies for heart patients, as well as studies to establish how these treatments work.

In a heart attack, blocked arteries can cut off the blood supply to areas of heart tissue. This leads to myocardial infarction - severe tissue damage caused by lack of oxygen, which is transported in the blood.

"We need more studies that look at the long term effects of these interventions, as well as at the types of cells that are used and how they actually repair the heart tissue," says lead researcher Dr. Enca Martin-Rendon, who works in the Stem Cell Research Department, NHS Blood and Transplant, at the John Radcliffe Hospital in Oxford, UK.

The team drew together data from 13 different trials involving 811 patients. Although these trials show that treatment with bone marrow stem cells (BMSCs) may lead to a moderate improvement in cardiac function, the researchers say there is still not enough evidence to confirm this. They also found that BMSC treatment did not reduce the measurable area of damaged heart tissue.

Only three trials looked to see if effects lasted for more than six months after BMSC treatment. The researchers discovered that in these trials,

there was no evidence of any benefit 12 months after treatment.

Quite how BMSCs cause this short term benefit is uncertain. One theory is that they enable extra blood vessels to develop, while another is that they release chemicals that encourage the growth of healthy heart muscle cells while decreasing the development of scar tissue in the damaged area.

"If it turns out these treatments are beneficial in any way, they could be made available to all heart attack patients. We think infusion with stem cells may help increase blood flow into damaged heart tissues, but without more investment in this area of research, we can't be sure," says Martin-Rendon.

Source: Wiley

Citation: Can stem cells heal damaged hearts? No easy answers, but some signs of hope (2008, October 8) retrieved 20 July 2023 from <https://medicalxpress.com/news/2008-10-stem-cells-hearts-easy.html>

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