

Stem cell source an important factor, impacting ability to treat myocardial infarction

February 13 2013

When a research team from Denmark and Sweden compared the therapeutic capabilities of adipose-derived stem cells (ASCs) versus bone marrow-derived stem cells (BMSCs) obtained from a single 84 year-old male donor with ischemic coronary disease to regeneratively treat myocardial infarction in a rat model, they found that the ASCs preserved more cardiac function in the test rats while neither stem cell type induced myocardial angiogenesis (blood vessel growth.)

The study appears as an early e-publication for the journal *Cell Transplantation*.

"Treatment of myocardial infarction with bone marrow-derived [mesenchymal stem cells](#) (BM-MSCs) and adipose-derived stem cells has shown promising results," said study co-author Dr. Trine Fink. "The transplantation of MSCs in treating myocardial infarction (MI) has been shown to improve left ventricular function in animal models. In this study, we compared the effects of adipose-derived stem cells and BMSCs from an elderly male suffering from [coronary atherosclerosis](#) when the donated cells were transplanted randomly, without the administration of [immunosuppressant drugs](#), into two groups of adult rats modeled with MI."

The researchers noted that the age and health status of cell donors are important factors and that the impact of [cell transplantation](#) using cells

from elderly patients with cardiac ischemia "needs to be elucidated."

The researchers found that ASCs ameliorated heart failure following MI in the group receiving ASCs while the group receiving the BMSCs received no similar benefit. They found that the BMSCs secreted a significantly larger amount of vascular endothelial growth factor, VEGF, than the ASCs, but that did not result in a better angiogenic response. In addition, the group receiving ASCs had improved left ventricular fraction.

That neither stem cell group induced myocardial angiogenesis raised questions about whether donor age and health have an effect on the efficacy of stem cells used in treating [myocardial infarction](#), said the researchers.

"While this study supported previous findings that ASCs are less prone to diminish in numbers and efficacy with aging when compared to BMSCs, the characteristics of MSCs from elderly patients suffering from coronary atherosclerosis need to be determined," they concluded.

More information: [www.ingentaconnect.com/content ... ints/ct0921rasmussen](http://www.ingentaconnect.com/content/intsc/ct0921rasmussen)

Provided by Cell Transplantation Center of Excellence for Aging and Brain Repair

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