

Robert Schultz
ELE 482
2/27/2006

Stem Cells in Cardiac Repair

Heart disease and heart attacks represent an epidemic that affects not only people in this country but throughout the world. While medical advances have been made in treating the two, the patients are still usually subject to pain and always at risk for another heart attack. Recent being done now has provided new hope for these patients.

Stem cell research has been at the heart of any discussion about the future of medicine. While always the subject of controversy, most believe that stem cells are the key to curing most of our diseases. Researchers in both England and the United States, as well as around the world, have set out to apply the use of stem cell therapy in treating heart disease and heart attacks.

Stem cells come in a number of varieties. Among them are bone-marrow circulating progenitor cells (BMPC), skeletal myoblasts (SMs), embryonic stem cells (ESC), and resident cardiac stem cells. Among these types the SM and BMPC types were used in studies conducted in London.

When applying the skeletal myoblasts, researchers used them only for patients suffering from heart failure. The results were astounding. At the time of bypass surgery the patients received an injection of SM cells around the heart. After about 3 months the patients reported improved left ventricular ejection fraction (LVEF, the fraction of blood pumped out per heart beat). The main drawback to this method was 4 out of the 10 patients experienced ventricular arrhythmia, one of which

associated with syncope (temporary loss of consciousness due to drop in blood pressure). While a group of 12 different patients didn't experience any problems, this is still a concern.

The research with BMPCs is much more promising. This method has been used with a number of different groups, ranging from acute heart attack patients to heart failure patients. In some of the cases patients had the BMPCs injected while others had them transplanted. In all cases the patients had greatly improved LVEF as well as overall increased ventricular dimensions. In terms of heart failure patients the results were even more impressive. In a study with patients awaiting heart transplants, five of the patients showed increased myocardial oxygen consumption. Four out of the five had such a dramatic increase that they were no longer eligible for the transplant.

While still in its infancy, stem cell therapy has great promise when used for treating an assortment of cardiac patients. Still many years off, researchers continue to conduct experiments and hope to move into large scale clinical trials soon.

<http://en.wikipedia.org/>

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