Mending Heart Failure: Stem Cells Are the Hope for the Future

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The adult cardiovascular system, comprised of blood vessels and heart, fails as individuals age--and can result in congestive heart failure--a syndrome familiar to most of us. This failure is in part due to the fact that, in the western world, atherosclerosis and resultant ischemic heart disease occurs. The constant challenge to the ability of vessels to repair themselves--combined with the fact that the adult heart does not contain reserve cells and cannot regenerate after injury--means that when acute damage occurs, the heart and blood vessels are often incapable of an adequate response. The result is acute myocardial infarction and progression to congestive heart failure.

To begin to treat these failures of innate repair, we now routinely deliver stem cells or muscle derived progenitor cells both to damaged myocardium and to injured vessels. The results are somewhat compelling. Since we first demonstrated in 1998 that cells can begin to repair damaged heart, this field has exploded.

Cell-based clinical trials as an adjunct to cardiac bypass surgery and more recently as a sole therapy are underway in Europe and the US. The latest clinical and pre-clinical data comparing myoblasts and bone marrow stem cells fro cardiac repair was presented as will insights into how each cell type might function.

Summary: Cell therapy offers an unprecedented opportunity to treat the underlying problems in the heart and vasculature after injury or disease--instead of our current options which just treat the remaining healthy part of the tissue. Its promise looms large and the potential is waiting to be tapped.
The main source of adult stem cells: Muscle myogenises and bone marrow angiogenesis--these are trained to make any new tissue.
The future--cell and gene therapy to repair the injured heart.