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Commentary

A Systematic Review of the Use of Autologous Stem Cells from the Bone Marrow to Treat Acute Coronary Artery Disease

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DESCRIPTION

Congestive heart failure and the accompanying mortality are primarily brought on by Acute Myocardial Infarction (AMI) in affluent nations. Heart tissue, in contrast to many other tissues found throughout the body, has a reduced capacity for proper self-repair following Myocardial Infarction (MI). The life span of MI patients has been successfully extended with the use of pharmaceuticals. Primary angioplasty has more recently replaced other treatments as the preferred option in areas in which the service is provided since it has been demonstrated to cut early mortality in half. More than 90% of MI patients who have Primary Percutaneous Coronary Surgery (PCI) have their normal blood flow returned to the infarct-related arteries.

The long-term prognosis of individuals with AMI has improved to early reopening of the blocked artery after MI. The disease's progression and the onset of heart failure that is congestive can still be prevented, though. Stem/progenitor cell transplantation is one of the alternative treatments for persistent myocardial dysfunction that is now being researched to supplement the available thrombolytic therapy and primary angioplasty. The justification for administering cell treatment after MI stems from the supposition that because the damaged heart tissue is unable to regenerate; those lymphocytes may be capable of replacing or repair the tissue. As a result, there have been several clinical trials conducted globally.

Almost five years ago, the first Stage I clinical testing using marrow stem/progenitor cell treatment for MI were conducted. Although the original trials were not intended to evaluate the intervention's effectiveness, they did show a promising increase in a variety of medical endpoints and heart function and provided evidence that it was safe. Bone marrow mast cells may help vascularize ischemic portions of the infarcted myocardium, according to preclinical experimental investigations. The new intervention's mechanism of action in experimental and clinical investigations is still unclear and probably complex. According to certain theories, stem cells or other, more developed cells within the transplant may have a paracrine function, act as a reservoir for cardiomyocytes and vascular progenitors, or support indigenous cardiac stem cells. To answer this question, additional experimental investigations could be necessary. Recent Randomized Controlled Trials (RCTs) has raised the possibility that the first global improvements in heart function observed may be extremely limited and that the effect of stem cell transplantation may only be felt in areas where there has been an infarct. These inconsistent results led us to conduct a meta-analysis of recent RCTs, the findings of which we now provide. Trials that matched the requirements below could be included in this investigation: RCTs, attendees with a clinical diagnosis of AMI, any autologous BMSCs that had recently been isolated without restrictions on dose or route of administration, participants in the comparator arm who did not receive BMSC (for example, control media or plasma), and (v) founder that were permitted as long as they were applied equally to each treatment arm. Trials that used BMSCs that had been cultured *in vitro* for more than 24 hours prior to infusion were disqualified because doing so might have enriched a particular progenitor cell population.

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