

**Title: Efficacy of Stem Cell Therapy in Patients with Acute Myocardial Infarction: A Systematic Review and Meta-Analysis**

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**"Introduction**

Despite significant progress in heart failure management, its burden remains enormous. Clinical studies in mice have shown efficacy of stem cell therapy to restore heart function, but questions of efficacy, lack of mechanistic understanding of underlying biological effect in humans and controversy about its effectiveness and safety profile persist.

**Hypothesis**

Stem cell therapy would result in greater improvement in ventricular function compared to standard therapy in patients with acute myocardial infarction (AMI).

**Methods**

A PubMed search conducted using search phrases “stem cell therapy for acute myocardial infarction” yielded total of 1372 articles; 173 articles were reviewed. Studies involving human subjects with AMI, with infusion of stem cells for treatment in English or with English translation were included. Studies without control group, imaging data, those using G-CSF (Granulocyte-colony stimulating factor) & including patients with chronic myocardial infarction/cardiomyopathy were excluded. Data collected included: year of publication, country of study, study design, number and ages of patients in both treatment and control groups, time from symptoms to treatment, number, type and source of stem cells, method of administration, time from symptoms to PCI, time from PCI to infusion, follow-up, ventricular volumes and function, infarct size, wall motion score index and side effects.

**Conclusions**

Stem cell therapy resulted in slightly greater improvement in left ventricular ejection fraction and wall motion abnormality in most studies. Acute and delayed side effects were mainly cardiac, no allergic reactions noted. Further prospective randomized large scale studies will help delineate the most effective dose and type of stem cell therapy.

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