Efficacy of Stem Cell Therapy in the Treatment of Heart Failure: A Systematic Review

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Citation:
Mirnezhad F, Jamshidbeigi A R, Ghasemi A. Efficacy of Stem Cell Therapy in the Treatment of Heart Failure: A Systematic Review. *Iranian biomedical journal*. Supplementary (12-2024): 154.

ABSTRACT

Introduction: Heart failure is a devastating disease causing significant mortality and impacts individuals with various heart disorders such as coronary and valvular heart diseases. Stem cell therapy, which involves the transplantation of stem cells into patients, offers a potential treatment option. This study aimed to investigate the effect of stem cell therapy on heart failure treatment outcomes.

Search Strategy: This systematic review followed the PRISMA checklist. An advanced search was conducted in PubMed, Scopus, and Google Scholar using keywords "cell therapy", "heart failure", and "cardiomyopathy" from 2016 to 2024. Articles were reviewed up to May 1, 2024. Inclusion criteria were studies involving patients with a definite diagnosis of heart failure, articles conducted on humans, and original articles in English. Exclusion criteria included duplicate articles and non-original articles, such as reviews.

Results: Among 131 initial articles, 9 met the inclusion criteria after removing duplicates and screening titles and abstracts. Seven studies reported positive effects of stem cell therapy on patients with heart failure, while two did not confirm this relationship. Stem cells show promise for treating severe symptomatic heart failure due to ischemic and non-ischemic cardiomyopathy, maintaining heart function. However, there were contradictions in the preclinical and clinical outcomes of left ventricular assist devices (LVAD) and cell therapy, particularly in advanced chronic heart failure (CHF) patients. Despite these controversies, evidence suggests stem cell therapy combined with LVAD support might benefit CHF patients.

Conclusion and Discussion: Stem cell therapy holds promise for treating heart failure. However, additional research is needed to address discrepancies and validate its effectiveness. Developing robust infrastructure and protocols for the clinical implementation of stem cell therapy appears to be essential.

Keywords: Cardiomyopathies, Heart failure, Stem cells, Systematic review

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[DOI: 10.61186/ibj.25th-11th-IACRTIMSS]