EFFICACY AND LONG-TERM EFFECTS OF BONE MARROW-DERIVED STEM CELLS ON MYOCARDIAL FUNCTIONS AFTER ACUTE MYOCARDIAL INFARCTION

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ABSTRACT

Ischaemic heart disease is the leading cause of death in year 2011, accounting for 7.25 million deaths per year and 12.8% of total mortality worldwide according to World Health Organization. Although there are advanced management strategies in preventing and treating ischaemic conditions and reducing the mortality, there is still an increased prevalence of heart failure after survival in post-myocardial infarction. With the development of stem cell therapy, scientists and researchers tend to repair damaged myocardium by applying cell biology and engineering principles. As adult bone marrow is a rich source of several stem cells populations, many clinical studies have been exploring bone marrow- derived stem cells with varying results, yet the overall efficacy and long-term effects of bone marrow- derived cells on myocardium functions is to be determined through the review of various studies. This study can help doctors and scientists from all aspects of medical field in better understanding of the new approach of stem cells therapy in tissue and organ regeneration and better clinical application in management of acute myocardial infarction. This study was aimed to evaluate the efficacy and long-term effects of bone marrow-derived stem cells on myocardial. This study is a structured review of 6 articles which met the inclusion and exclusion criteria during literature search on databases. The results indicate that 1) left ventricular ejection fraction was found to be significantly reduced while changes in left ventricular end diastolic volume and left ventricular end systolic volume were not significant, 2) adverse cardiac complications (death, acute myocardial infarction and restenosis) were found to be reduced with the cell therapy, 3) the use of bone marrow-derived stem cells were not found to be associated with major adverse effects, 4) current studies are small in sample size with short study duration. In conclusion, although the results of the reviewed studies are inconclusive, it can be said that there are positive trends of the use of bone marrow-derived stem cells on improving the myocardial functions after acute myocardial infarction. The procedures are considered safe for 12 months as resulted from the studies.