Effect of embryonic stem cells on the treatment of myocardium infarction in animal models (a preclinical studies review)

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Abstract

Myocardium infarction (MI) is the leading cause of mortality and morbidity in the developed countries. It is also one of the main cause of the mortality and morbidity in the developing countries and rest of the world. There are different risk factors for that and among them smoking, age, sex, health problems like diabetes, high blood pressure, and lack of physical exercise are more involved.

The consequence for MI is to reduce blood flow in heart tissue. There are different routine treatments for MI like oxygen therapy, injection of heparin and anti-pallets medications like Aspirin or Clopidogrel to restore blood flow in the heart. There are new approaches for treatment of MI: These approaches can use as supplementary methods. Among them stem cell treatment is a promising approach. Animal models are good sources to do research for preclinical studies as with them we can mimic the clinical health problems like MI: The main advantage for stem cell administration is that it is a less expensive- less invasive promising treatment method. The supplementary treatment with stem cells in addition to the routine treatment methods is that it can improve the quality of treatment. In animals especially small animal's sudden death can arise of MI cause. There are different symptoms in animals after MI that among them myocardium scar formation, decreasing heart function, decreasing blood flow, increasing blood pressure are key parameters. MI in some animals like cats and dogs are rare but in small animals especially in rats and mouse causes after ligation when those animals are used as models to evaluate the effects of MI on them. These help researchers to have a better understanding of MI in experimental models to improve the quality of research and treatments in clinical studies. Studies shows that the administration of stem cells can improve the heart function following MI in animal models studies. There are two main types of stem cells but in this review we only review the embryonic stem cells (ESCs) and the other source (Adult stem cells) is out of scope of this review.

In this review poster we undertake a review on the recent findings on this topic in experimental studies.

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