Stem Cell Therapy in Liver Cirrhosis

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Abstract
Cirrhosis results from different mechanisms of liver injury that lead to necroinflammation and fibrogenesis; Patients with liver cirrhosis often require liver transplantation but it is affected by many problems, including relative operative damage, high costs, lack of donors, and risk of rejection. Currently studies are shown the Stem cell therapy has the potential to provide a valuable adjunct to the management of disease. Stem cell should be the natural candidates to provide a renewable source of cells for transplantation.

The main mechanism of stem cell therapy is that stem cell capacity to differentiate into any of the hundreds of distinct cell types that comprise the human body. In addition to their potential in therapeutics can be used to study the earliest stages of human development and disease modeling using human cells.

Keywords: Cell Therapy; Liver Cirrhosis; Stem Cell; Transplantation.

I. INTRODUCTION

Cell Stem cells is applied to cells from many different sources with many different functions and phenotypes and is a general descriptive term, Stem cells characteristics are regenerate identical cells, transplant ability, maintain the ability to proliferate and multipotentiality, but can be stimulated to leave differentiate into specific cell types and this self renewal cycle. Stem cells are divided four categories: totipotent, pluripotent, multipotent or unipotent. Totipotent cells are capable of giving rise to any cell in the embryo and extra embryonic tissue. Stem cell populations that may give rise to only limited cell types are multipotent. In this article, we review the potential for stem cell therapies to treat liver cirrhosis, MSCs cells are reprogrammed as useful sources of cells that can be change to liver cell for treatment of cirrhosis but pathological implication and autologous bone marrow stem cell therapy for cirrhosis are still to be elucidated and clinical trials that required before this cell transplantation must be performed in Large-scale controlled to becomes a regular therapy.

II. PRACTICE POINTS

- lifestyle changes—stop or reduce drinking, stop smoking,
- lose weight (if obese) † nutrition intervention—adequate diet (calories and composition)
- drug therapy—as yet no FDA-approved therapy for alcoholic cirrhosis or alcoholic hepatitis.
• some CAM agents hold promise for cirrhosis; pentoxifylline appears effective for alcoholic hepatitis.
• liver transplantation corrects liver failure and disease complications

III. STEM CELL

In cirrhosis currently, most of studies have been performed in rodent models of liver injury using either whole/fractionated bone marrow transplantation/injection or peripheral blood stem cells obtained through the administration of growth factors, because of the increasing shortage of livers for transplantation, scientists attempted to performed experiments for optimizing and demonstration of the supposed ability of adult bone marrow stem cells to differentiate into mature cells other than blood cells in different adult tissues and functioning hepatocytes.

IV. THE ROLE OF LIVER TRANSPLANTATION

There have been multiple recent studies and reviews concerning liver transplantation in patients with severe alcoholic cirrhosis.150–154 There is a well-documented organ shortage for liver transplantation and there are serious ethical issues concerning this controversial area that have precipitated these studies. Hepatitis C and ALD are the two major reasons for liver transplantation in the USA. Data clearly demonstrate that patients transplanted for ALD do (short- and long-term) as well as patients transplanted for hepatitis C or other types of liver disease. However, alcoholic hepatitis clearly is not an indication for liver transplantation at the current time. Virtually all centers require that alcoholic patients undergo formal psychiatric evaluation and treatment prior to transplantation. Many centers impose a ‘six month rule’ of abstinence before being considered for orthotopic liver transplantation (OLT); however, most centers also show some flexibility with this rule. It is unusual for ALD alone to be the cause of graft failure. The majority of patients with ALD are not listed for liver transplantation for multiple reasons including continued alcohol consumption, improvement of liver function with abstinence, lack of interest, etc. Patients with ALD appear to have a higher incidence of certain malignancies of the upper airway and upper digestive tract. Therefore, these patients should be screened for these processes prior to transplantation and monitored carefully.

V. POST-TRANSPLANTATION

Data suggest that, following transplantation, patients who had ALD and those who were transplanted for other reasons consume alcohol at relatively similar rates, although those who had ALD may consume greater amounts. The rate of alcohol use increases over time for all transplant recipients. Some centers use multi-stage screening processes with risk stratification to select patients with low rates of recidivism. Clearly, more studies are required to refine our predictive capabilities for both recidivism and non-compliance. Quality of life appears to improve after liver transplantation due to any etiology, although those with non-alcohol related etiologies may improve more.

CONCLUSION

Studies suggested that multipotent stem cells may exist among bone marrow cells; and bone marrow stem cells contribute to liver regeneration after injury [54]. In vitro studies reported that bone marrow MSCs can inhibit collagen
synthesis and induce apoptosis in hepatic satellites cells [60] and studies on animal showed the anti-fibrotic effects of MSCs injected through peripheral vein [61]. According to the potential for stem cells to differentiate or their paracrine secretion, stem cell transplantation has become an attractive alternative therapeutic method for the treatment of patients with liver disease, at least, at a temporary support of hepatic function until a liver becomes available for organ transplantation.

In this review, the potential of the BMC to differentiate into hepatocytes and other cell lineages has already been reported. Several reports have also demonstrated the plasticity of hematopoietic stem cells to differentiate into hepatocytes, and we demonstrated, MSCs cells are reprogrammed as useful sources of cells with hepatic potential for cirrhosis therapy but pathological implication and autologous bone marrow cell therapy for cirrhosis are still to be elucidated and clinical trials that required before this cell transplantation must be performed in Large-scale controlled to becomes a regular therapy

ACKNOWLEDGMENTS

We would like to thank all people who participate in this study.

REFERENCES


