



POSTER

# Transplantation of umbilical cord blood-derived mesenchymal stem cells to treat liver cirrhosis in mice: a comparison of tail and portal vein injection

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## Abstract

**Background:** Up to date, there have been some studies indicating positive effects of stem cells on treating the liver cirrhosis. In this study, we compared the effectiveness of two methods in which mesenchymal stem cells harvested from umbilical cord blood (UCB-MSCs) were transfused either via portal or tail veins to the mouse models of liver cirrhosis.

**Methods:** Liver cirrhosis was induced by CCl<sub>4</sub> (1 ml/kg) on male Swiss mice within 11 weeks, followed by administration of 10<sup>6</sup> UCB-MSCs via the portal or tail vein. After 21 days, blood samples were collected for measuring transaminase, bilirubin and albumin activities. The expression of fibrosis-associated genes, specifically procollagen – alpha 1 and integrin – beta1, were assessed using qRT-PCR. The histopathology was also evaluated using hematoxylin/eosin, Masson trichrome staining and immunohistochemistry with collagen type 1 and alpha-SMA antibody.

**Results:** UCB-MSCs transplantation significantly improved post-21 days of treatment in the liver fibrosis mice as compared with placebo group. Notably, UCB-MSCs transferred through portal veins revealed a more positive effect than via tail veins as indicated by the improvement in the biochemical indexes, fibrosis-related genes expression, and liver histopathology.

**Conclusion:** The UCB-MSCs therapy proved to be a promising method for treating the liver cirrhosis. The method of delivering stem cells through portal vein was more effective than through tail vein.

## Keywords

Mesenchymal stem cell, umbilical cord blood stem cell, liver fibrosis, transplantation, stem cell, liver disease

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