The effect of HUCB stem cells transnsplantation on preservation of liver vasculature in mice

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Abstract: Background and aim: Liver fibrosis is an accumulation of scar tissue in the liver caused by liver disease like hepatitis. However, numerous chemicals and drugs, like alcohol, can also cause fibrosis. As a result, effective antifibrotic treatments are urgently needed. Recently, many studies demonstrated that stem-cell-based therapies might be developed for effective treatment of liver disease by ameliorate liver fibrosis and preserve vascular endothelial function by reducing the biochemical markers of inflammation (Cell adhesion molecules (CAMs)) and increase vascular endothelial growth factor (VEGF). **Objective**: The present work is designed to investigate the effect of HUCB stem cells transnsplantation on preservation of vasculature of liver and decrease inflammation and fibrosis of portal tract mice. **Methods**: Induced hepatic fibrosis in mice with CCl4, HUCB stem cells were infused systemically through the tail vein immediately after exposure to CCl4. Then continue injection of CCl4 for10 weeks, control mice received only saline infusion. After 10 weeks of the first dose of CCl4 mice were killed under anesthesia, liver was taken for histopathological examination, Blood was collected for measuring sICAM- and vascular endothelial growth factor (VEGF). **Results**: found that The serum level of sICAM-1 increased significantly in G2 (non treated) compared to G3 (control group). Stem cells reduced the increase in sICAM-1 significantly ($P<0.05$). Induction of liver fibrosis increased significantly the release of sVEGF compared to the control group. treatment with stem cells increased significantly the release and expression of sVEGF histological examination suggested that hepatic damage recovery was much better in the stem cells treated mice as the portal tract inflammation, fibrosis were statistical significantly lower in treated mice than in non treated. **Conclusion**: The results suggest that Human Umbilical Cord Blood Stem cells improve and preserve vasculature of liver and decrease inflammation and fibrosis of portal tract mice.

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