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Human amniotic membrane as a biological curative to repair liver biliary fibrosis induced in rats

Luciana Barros Sant'Anna¹, Raduan Hage¹, Emilia AL Arisawa¹, Maria Angélica G Cardoso¹, Ornella Parolini² and Nilson Sant'Anna³

¹University of Vale do Paraíba, Brazil

²Fondazione Poliambulanza-Istituto Ospedaliero, Italy

³National Institute for Space Research, Brazil

Human placenta at term which is usually discarded as medical waste has attracted much attention as a source of tissues and stem/progenitor cells for research and potential clinical applications. The anti-inflammatory, anti-scarring and wound healing properties of amniotic membrane (AM) could make her useful for development of new therapeutic approaches in regenerative medicine and warrant studies of their effects in animal models of inflammatory and fibrotic pathologies. Biliary fibrosis and resultant cirrhosis are among the most common outcome of chronic liver disease. Currently, liver transplantation remains the only effective treatment. Here, we investigated if the intact hAM has the capacity to reduce a well-established liver fibrosis induced in rat by bile duct ligation (BDL) model. After 2 weeks from BDL, the liver was covered with a fragment of hAM or left untreated. Six weeks later, the fibrosis was first assessed by semi-quantitative scoring systems and by CellProfiler digital image analysis to quantify the area occupied by ductular reaction, activated myofibroblasts, collagen deposition and by transforming growth factor (TGF)-1, the main profibrogenic factor in chronic liver disease. After 6 weeks of BDL, AM rats showed a significant reduction in the severity of fibrosis. The amount of collagen deposition, the ductular reaction and the myofibroblasts were all reduced to about 50% of levels observed in BDL rats. AM was able to markedly attenuated TGF-1 immunorexpression in liver. These findings suggest that hAM patching is useful for treating cholestatic fibrosis and the mechanism was partly by reduction in the TGF-1 expression.

Biography

Luciana Barros Sant'Anna obtained her Master in Buco Dental Biology and Pathology (2001) and PhD in Buco Dental Biology- focus on Histology (2004) from Campinas University, SP, Brazil. In 2009 she completed her Postdoctoral studies in the field of human adult stem cells with focus on cells and tissues derived from placenta at Centro di Ricerca E.Menni, Fondazione Poliambulanza, Istituto Ospedaliero, Italy. Currently, she is Researcher of Immunology Laboratory of the Institute of Research & Development from University of Vale do Paraíba, São José dos Campos, Brazil and Professor of Embriology, Histology and Anatomy of the same University. Since 2009 she is member of International Placenta Stem Cell Society (IPLASS).

lucianabsa@gmail.com

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