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Immunomodulation and regenerative potentiality of Hepatogenic Bone Marrow Mesenchymal Stem Cells (BMMSCs) combined with Praziquantel on Hydatid induced Hepatic Cyst

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Introduction: There are several problems the scientists are facing when they are dealing with hepatic hydatidosis cysts. Firstly, parasites may enclose inside liver cysts and keep themselves from immune system. Besides, the cysts are with low antigenicity and impermeable to available anthelmintics. Therefore, there is an urgent need for additional tools to overcome these hepatic cyst problems.

Aim: The aim of the present study was to investigate the host protective immune responses against hydatid cystic antigens and regenerative potentiality of hepatogenic BMMSCs combined with anthelmintic drugs in experimentally hydatid-infected mice liver.

Materials & Methods: Hydatid-infected mice were received intrahepatic transplantation of hepatogenic BMMSCs, alone and combined with oral praziquantel (PZQ) (seven-week post infection). At the 3rd month post infection, livers were collected for subsequent flow cytometric, histopathological, morphometric and gelatin zymographic studies. Serum total protein, albumin, globulin, ALT and AST were determined by colorimetric method using spectrum kits. Th1-polarized cytokine (TNF- α) and Th2-polarized cytokine (IL-4) were determined using ELISA kits. After transplantation, hepatogenic BMMSCs differentiated into functioning liver-like cells as evidenced by their ability to express hepatocyte-specific markers namely, CD13, CD29, CD31, CD44, CD45, CD51, CD59, CD73, CD90, CD105, CD106, CD166 and lack CD19, CD34, CD45 and CD79. Regression of hydatid liver cyst was also observed in transplanted groups, as evidenced by histopathological, morphometric, and gelatin zymographic results besides decreased ALT and AST as indication of liver function improvement with shifting to Th1-polarized cytokine. PZQ additionally enhanced the beneficial effects observed in hepatogenic BMMSCs -treated groups.

Results: Our results suggest that combining hepatogenic BMMSCs to PZQ caused better enhancement in hydatid induced liver cyst, compared to using each alone. Based on the obtained results, it is firmly believed that, stem cell therapy may be introduced to modulate host protective immune responses against hydatid cyst, in addition to regenerate indurated liver tissues

Biography

Faten AM Abo Aziza has completed her PhD from Beni-Suef University, Egypt and Post-doctoral studies from Kyushu University, Graduate School of Dental Science, Japan. She is currently serving as an Associate Professor of Clinical Pathology at the National Research Centre, Cairo, Egypt. She has published more than 13 papers in reputed journals. Her research interest is mesenchymal stem cells applications and is the Principal Investigator of a project, related to immunomodulation and regenerative potentiality of mesenchymal stem cells..

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