Transplanted MSCs slow progression of lupus nephritis by suppressing Tfh cells in SLE animal model

Published on July 15, 2015 at 4:30 AM

Systemic lupus erythematosus (SLE) is an autoimmune disease that produces autoantibodies and subsequent immune reactions that can lead to a variety of symptoms, including inflammation of the kidneys, or nephritis. When researchers transplanted mesenchymal stem cells (MSCs) derived from human bone marrow into mice modeled with SLE, they found that inflammation was reduced and nephritis "attenuated." They suggested that their study revealed a "novel mechanism" by which the MSCs can regulate the progression of autoimmune diseases such as SLE.

"SLE can be refractory to traditional treatments and be life threatening, especially when major organs are invaded" said Dr. Jeehee Youn, Department of Anatomy and Cell Biology, College of Medicine, Hanyang University . "Our study suggests that MSCs suppress the development of cells that help activate the immune components."

Their study that will be published in a future issue of *Cell Transplantation* and is currently freely available on-line as an unedited early e-pub at: http://www.ingentaconnect.com/content/cog/ct/pre-prints/content-CT-1387_Jang_et_al

The researchers noted that the damaging antibodies in SLE are produced with the help of follicular T helper (Tfh) cells. They found that MSCs worked to slow the progression of lupus nephritis by suppressing the emergence of the Tfh cells in the mice modeled with SLE. They speculated that, since MSCs are known to differ functionally depending on their microenvironment, they are not naturally immunosuppressant, but require a "licensing step" provided by pro-inflammatory molecules.

"The immodulatory potential of MSCs, along with their low immunogenicity, seems to offer a promising treatment for severe refractory autoimmune diseases," concluded Dr. Youn.

"Though the survival rate for patients diagnosed with SLE is improving, there is still no cure and risk of fatality is still a concern. Currently, the disease is treated by immunosuppression, achieved by the administration of immunosuppressants that can cause deleterious side effects," said Dr. Maria Carolina de Oliveira Rodrigues of the University of São Paulo, Brazil and section editor for Cell Transplantation. "Stem cell therapy is an attractive treatment option in that it is associated with fewer side effects than pharmacotherapy and, as the researchers suggested, it may actually slow the progression of the disease rather than merely alleviate symptom severity. Before transplantation of MSCs or any other type of cell therapy can be implemented in medical practice, further studies should evaluate whether the risk of immune rejection of the cells, if not autologous, would necessitate concomitant treatment with immunosuppressants."

Source:
Cell Transplantation Center of Excellence for Aging and Brain Repair

---