Role of Subventricular Zone Derived Neural Precursor Cells in the Therapy of Experimental Autoimmune Encephalomyelitis

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ABSTRACT
Examining the accumulation of stem cells following transplantation can provide valuable insight on the possibilities of stem cell-based human therapies for neurodegenerative disorders, namely multiple sclerosis (MS). MS is a chronic disease that attacks the central nervous system (CNS). Symptoms may be mild, such as numbness in the limbs, or severe, such as paralysis or loss of vision. MS is currently believed to be an immune-mediated disorder caused by the patient’s own immune cells gaining entry into the CNS via the impaired blood–brain barrier. This leads to demyelination and scarring in addition to other common neurological symptoms associated with autoimmune disease. The purpose of this report is to use td-Tomato transgenic mice to determine the accumulation of intravenously-injected Green Fluorescence Protein (GFP) reporter neural precursor cells (NPC) in the CNS. Using a mouse model of MS known as Experimental Autoimmune Encephalomyelitis (EAE), the effect of NPCs in the CNS was evaluated by clinical scores, in vivo magnetic resonance imaging (MRI) and Xenogen imaging, and histology. This study provides support for a potential role of NPCs in the therapy of EAE and MS in humans.

KEYWORDS: stem cell use for neurodegenerative disorders; multiple sclerosis

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