# Report on remission in patients with multiple sclerosis three years after stem cell transplant

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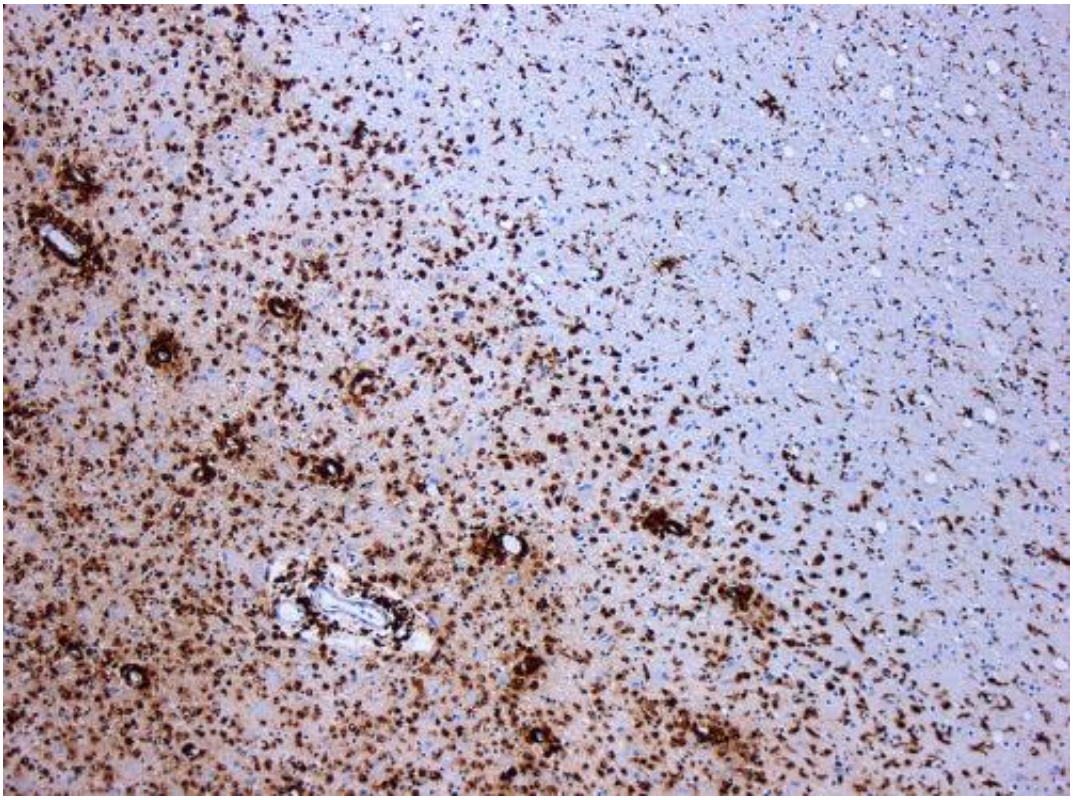

Demyelination by MS. The CD68 colored tissue shows several macrophages in the area of the lesion. Original scale 1:100. Credit: CC BY-SA 3.0 Marvin 101/Wikipedia

Three years after a small number of patients with multiple sclerosis (MS) were treated with high-dose immunosuppressive therapy (HDIT) and then transplanted with their own hematopoietic stem cells, most of the

patients sustained remission of active relapsing-remitting MS (RRMS) and had improvements in neurological function, according to a study published online by *JAMA Neurology*.

MS is a degenerative disease and most patients with RRMS who received disease-modifying therapies experience breakthrough disease. Autologous (using a patient's own cells) hematopoietic cell transplant (HCT) has been studied in MS with the goal of removing disease-causing immune cells and resetting the immune system, according to the study background.

The Hematopoietic Cell Transplantation for Relapsing-Remitting Multiple Sclerosis (HALT-MS) study examines the effectiveness of early intervention with HDIT/HCT for patients with RRMS and breakthrough disease. The article by Richard A. Nash, M.D., of the Colorado Blood Cancer Institute at Presbyterian/St. Luke's Medical Center, Denver, and coauthors reports on the safety, efficacy and sustainability of MS disease stabilization though three years after the procedures. Patients were evaluated through five years.

Study results indicate that of the 24 patients who received HDIT/HCT, the overall rate of event-free survival was 78.4 percent at three years, which was defined as survival without death or disease from a loss of neurologic function, clinical relapse or new lesions observed on imaging. Progression-free survival and clinical relapse-free survival were 90.9 percent and 86.3 percent, respectively, at three years. The authors note that adverse events were consistent with the expected toxic effect of HDIT/HCT and that no acute treatment-related neurologic adverse events were seen. Improvements in neurologic disability, quality-of-life and functional scores also were noted.

"In the present study, HDIT/HCT induced remission of MS disease activity up to three years in most participants. It may therefore represent

a potential therapeutic option for patients with MS in whom conventional immunotherapy fails, as well as for other severe immune-mediated diseases of the central nervous system. Most early toxic effects were hematologic and gastrointestinal and were expected and reversible. Longer follow-up is needed to determine the durability of the response," the authors conclude.

In a related editorial, M. Mateo Paz Soldán, M.D., Ph.D., of the University of Utah, Salt Lake City, and Brian G. Weinshenker, M.D., of the Mayo Clinic, Rochester, Minn., write: "This study and another phase 2 single-arm study leave little doubt that high-dose immunotherapy is able to substantially suppress inflammatory disease activity in patients with MS who have active disease in the short term. There is some evidence for long-term suppression of MS. Lessons have been learned about how treatment-related morbidity and mortality may be reduced. However, deaths have occurred, even in small studies, and aggressive regimens have resulted in lymphomas associated with Epstein-Barr virus."

"Nash et al show evidence of prolonged depletion of memory CD4+ cells, depletion of CD4+-dominant T-cell receptor clones and evidence of 'immune reset'; however, clinical or radiologic evidence of relapse trumps immunologic evidence of immune reset, and this study raises concern that those end points have not been adequately achieved. The jury is still out regarding the appropriateness and indication of HCT for MS," the authors conclude.

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