

Publication

Adult stem cell transplantation in autoimmune disease

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Author(s) Tyndall, Alan; Gratwohl, Alois

Author(s) at UniBasel [Gratwohl, Alois A.](#) ; [De Vere-Tyndall, Alan](#) ;

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PURPOSE OF REVIEW: This review presents the recent results of a decade's experience with hematopoietic stem cell transplantation for treating severe autoimmune disease, with special reference to new insights into pathophysiology. In addition, the newly evolving field of mesenchymal stem cell therapy of autoimmune disease is introduced. **RECENT FINDINGS:** Phase I/II studies in several major autoimmune disease have shown a satisfactory benefit risk ratio. Over one-third of patients achieve a durable remission with a treatment-related mortality of around 5%. Treatment-related mortality is less for some diseases (2% for multiple sclerosis). Phase III randomized controlled trials are advanced in systemic sclerosis, multiple sclerosis and Crohn's disease. In systemic sclerosis, data of the past 12 months suggest remodeling of collagen and normalization of microvasculature after hematopoietic stem cell transplantation, a new finding. Mesenchymal stem cells have shown promise in exerting an immediate anti-inflammatory immunomodulatory role in some autoimmune disease with little evidence of acute toxicity. **SUMMARY:** Hematopoietic stem cell transplantation for severe autoimmune disease has been shown to be feasible, and definitive phase III randomized trials are now in progress. Durable remission after immune reconstitution and tissue remodeling suggests an effect beyond profound immunosuppression. Mesenchymal stem cells show promise as immunomodulatory agents in autoimmune disease with low acute toxicity and no requirement for ablation of the recipient immune system.

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