

EFFECTIVENESS AND SAFETY OF
AUTOLOGOUS HEMATOPOIETIC
STEM CELL THERAPY (AHSCT) FOR
THE TREATMENT OF HUMAN TYPE-1
DIABETES MELLITUS
(STRUCTURED REVIEW)

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ABSTRACT

This paper provides a structured review of the literature about the effectiveness and safety of autologous hematopoietic stem cell transplantation (HSCT) therapy for the treatment of human type-1 Diabetes Mellitus (T1DM). A comprehensive search of PubMed, The Cochrane Library and other resources was conducted to identify the papers that reported on the study of the changes in the HbA1C levels, C-peptide levels, insulin doses, time free from exogenous insulin and the side effects occurred in T1DM patients receiving autologous HSCT therapy. Of 279 articles uncovered from the search, 52 articles were relevant but only 6 articles met both inclusion and exclusion criteria. Regarding the source of hemopoietic stem cells, 5 studies used the bone marrow hemopoietic stem cells collected from the peripheral blood and only one study used the stored patients' own umbilical cord blood. Based on the selected studies, a significant fall in HbA1C levels and an improvement in C-peptide level were observed with bone marrow HSCT but not with umbilical cord blood HSCT. Similarly, the achievement of insulin free time and reduced dependency upon daily insulin were seen in the majority of the patients who treated with bone marrow HSCT while the amount of daily insulin requirement was increased in those treated with umbilical cord blood HSCT. Generally, HSCT therapy was found to be well-tolerated without occurrence of major complications and its common side effects (febrile neutropenia, nausea, diarrhea, alopecia, vomiting and rash) were closely related to the results of low WBC counts or bone marrow suppression due to the drugs used for the mobilization and conditioning but these did not occur with umbilical cord blood HSCT.