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Mesenchymal stromal cells: Characterization and clinical effects in lymphoma patients with autologous hematopoietic stem cell transplantation

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Mesenchymal stromal cells (MSCs) derived from bone marrow possess immunoregulatory activity and are able to support hematopoiesis. Unfortunately, the data concerning the biological properties and possible use of MSCs in various pathologies are poor and often controversy. In this study, we demonstrated that bone marrow of patients with Hodgkin's and non-Hodgkin's lymphomas contains the population of adherent cells with fibroblast-like morphology capable to be expanded in vitro to obtain cell population with MSC-specific phenotype. Patient's MSCs were characterized by a well-defined hematopoietic-supporting activity coupled with decreased immunosuppressive and osteogenic potential. These properties provided the basis for the clinical application of co-transplantation of ex vivo expanded autologous MSCs and hematopoietic stem cells in malignant lymphomas to improve hematopoietic recovery and immune reconstitution. Co-transplantation of MSCs in average dose of 0.178×10^6 /kg was conducted in 74 patients with autologous hematopoietic stem cell transplantation (auto-HSCT). The control group included 83 patients eligible for standard HSCT. We revealed the decrease of the neutropenia and thrombocytopenia duration if hematopoietic stem cells were co-transplanted with low doses of autologous MSCs. Moreover, co-transplantation of MSCs was accompanied by more effective early lymphocyte recovery and naïve CD4 T-cell reconstitution, but did not result to regulatory T cell enhancement. Importantly, MSC infusions were associated with the decreased incidence of severe infectious complications and significantly better 5 year progression-free survival

Biography

Shevela E.Ya. has completed her Ph.D at the age of 23 years from Novosibirsk Medical Institute and postdoctoral studies from Novosibirsk Institute of Clinical Immunology. She is the Senior researcher. She has published more than 55 papers in reputed Russian and European journals

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