

Long-term results of autologous peripheral blood hematopoietic stem cell transplantation in patients with peripheral arterial diseases

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Abstract

The aim of our work was to assess long-term results of autologous peripheral blood hematopoietic stem cell application in patients with peripheral arterial diseases. Peripheral blood hematopoietic stem cells mobilized by granulocyte colony-stimulating factor were transplanted intramuscularly to 30 patients with peripheral arterial diseases (IIb stage by Pokrovsky). Standard treadmill test, ankle-brachial index estimation and ankle-brachial index restoration time estimation after loading were performed on 0, 3, 6, 12 and 60 months after transplantation. Immunohistochemical study of injured gastrocnemius muscle biopsies taken before peripheral blood hematopoietic stem cells transplantation and 3 months after the procedure was performed. Peripheral blood hematopoietic stem cells transplantation increases capillary density (22,4%, $p = 0,0005$). Ankle-brachial index increased by 18,1% on month 6 after transplantation without a tendency to change on month 12. 60 months after transplantation initial to hematopoietic stem cells transplantation ankle-brachial index rates were marked. Painless walking distance was increasing at all times of observation progressively, on month 60 no walking distance limitation was marked by most patients. Ankle-brachial index restoring time shows positive trend of the functional state of limb during the first year after transplantation, 60 months after transplantation it showed no «walking reserve» limitation in most patients. 5-years survival was 79%, death causes were stroke, cardiac pathology (3 cases), lung cancer. So, peripheral blood hematopoietic stem cells transplantation allows eliminating peripheral arterial diseases symptoms and preserving limb in long-term period. Autologous transplantation of peripheral blood hematopoietic stem cells has no complications and is safe for therapy of patients with peripheral arterial diseases II stage. © Human stem cells institute, 2013.

Keywords

G-csf, Immunohistochemistry, Muscle biopsy, Peripheral arterial diseases, Peripheral blood hematopoietic stem cells