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Efficiency of human fetal liver hematopoietic stem cells (hFL-HSC) transplantation in treatment of chronic limbs ischemia (CLI)

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The 37 patients were included in the clinical trials. Transplantation of the hFL-HSC ($AC133^{+}CD34^{+}CD38^{-}$ $CD45RA^{low}CD71^{low}CD7HLA\text{-}DR^{low}$) was performed to 19 patients. Cell transplants were introduced intramuscularly, by the 20-30 injections along the obliterating vessels. hFL-HSC transplantation led to the high activation of myosymplast regeneration. The growth of the number of neogenic capillaries and vascular bundles was registered. Vimentin and type IV collagen expression demonstrated the increase in 50-70% of the number of neogenic vessels. Laser Doppler Flowmetry approved the improvement of the microhemodynamics (microcirculation bloodstream in the peripheral vessels: before treatment 4.28±0.34 vs 8.12±0.43 units after 12 months, $p<0.01$ & capillary bloodstream reserve: 89.3±12.5 vs 167.5±9.7%, accordingly, $p<0.05$). Till the 3rd-6th month the increase of area and expansion of the collateral arterial vasculature were registered by arteriography. Dynamics of increase in pain-free walking distance depended on the degree of the primary ischemia and total duration of the disease. Starting from the 2nd week after transplantation, the trend to the healing of the ischemic defects on the foot and distal phalanxes of the toes was registered. Transplantation of hFL-HSC results in activation of the regenerative processes in the ischemic tissue leading to termination of degenerative and dystrophic processes and restoration of the myosymplast structure. hFL-HSC transplantation rises stimulation of the "still" angiogenesis, contributes to formation of the new and functionally capable vasculature. Thus, transplantation of the hFL-HSC is the efficient modern direction in treatment of CLI

Biography

Olexander Kukharchuk, M.D., Research Director of EmProCell Clinical Research Pvt. Ltd., visit-professor MGM University of Health Sciences, Mumbai, Professor of Medicine. Dr. Kukharchuk is editor of the Journal "Transplantology" (Ukraine). He is author of 17 patents, 253 scientific publications & the book "Stem cells: Experiment, Theory, Clinic.". Dr. Kukharchuk guide for fundamental and applied scientific research of Health Ministry Ukraine: "In experiments and clinicals, to determine effectiveness of transplantation of stem cells, tissues of embryo and extra fetal material and tissue therapy by Filatov in immune and oncopathological process, pancreo- and colonogenic peritonitis, aging and dysfunction of reproductive system"

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