

Exercise Performance vs. Growth of Haemopoietic Stem Cells Amount in CUWs' Blood after Noninvasive Modulation

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We've reported earlier about spontaneous regular fluctuations of concentration of the CD34⁺-cells recorded in the blood of Chernobyl cleanup workers (CUWs) in remote period of time and about an opportunity of artificial growth of the previously mentioned parameter by transcutaneous vibrational impact on awake medullary hemopoiesis zones. The current research aims at studying interfacing of CUWs' exercise performance indices and of the amount of haemopoietic stem cells in their peripheral blood after vibroacoustic influence.

Materials: A random sampling of CUWs under long-term dispensary observation (40 male patients, aged 50 on average) have been examined under dispensary conditions.

Methods: A course of vibroacoustic mobilization of autologous haemopoietic stem cells into the bloodstream from the bone marrow haemopoietic zones has been conducted with the purpose of correction of CUWs' psychosomatic condition. The CUWs' exercise performance has been examined via veloergometric exercise ECG testing before the modulation course and 3 to 6 months later on. CD34⁺-cell subpopulation in peripheral blood was estimated by laser cross flow-cytometry method (FACScan, Beckton-Dickinson) with monoclones (DAKO, BD) before and right after the end of the modulation course.

Results: For a cluster of patients examined, certain increase in the number of CD34⁺-cells in the blood right after the end of the modulation course has been discovered. Dynamic tracking (3 to 6 months) of this cluster has revealed certain increase in the number of patients capable of fulfilling the exercise ECG test; maximal oxygen uptake for all the patients of this cluster has also shown certain increase in the same period of time. On the contrary, increase of the reviewed indices were uncertain for those patients, who did not demonstrate any growth of the amount of CD34⁺-cells right after the modulation course.

Conclusions: For a distinct cluster of examined patients, interfacing has been discovered in between growth of the amount of CD34⁺-cells into their peripheral bloodstream right after the course of noninvasive vibroacoustic modulation and increase of the showings of their exercise performance in 3 to 6 months.