The blood stem cell's pool modulation in remote period improved health status of Chernobyl clean-up workers

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Correction of the psychosomatic disorders in numerous CUW population in remote period after the Chernobyl catastropheremains an issue in medical support of the mentioned population cluster. Earlier, we reported on the possibility of improving of somatic status of the CUWs achieved through vibroacoustic mobilization of autologous haemopoetic stem cells into the bloodstream from the bone marrow haemopoetic zones. Material: A random sampling of CUW persons under long-term dispensary observation (n=40, male, age 49,8±0,7) have been examined under dispensary conditions. The following group consisted of 36 males of the same age, also under dispensary observation but without impact of small radiation dozes in past history. Methods: The quality of life has been examined by Medical Outcome Study 36-Item Short-Form Health Survey (SF-36) method. The quality of life parameters in both CUW and following groups have been compared. A course of vibroacoustic mobilization of autologous haemopoetic stem cells into the bloodstream from the bone marrow haemopoetic zones has been conducted with the purpose of correction of psychosomatic status of CUWs. The following group has not undergone such vibroacoustic course. Various mononuclear cell subpopulations in peripheral blood were estimated by laser cross flow-cytometry method (FACScan, Beckton-Dickinson) with monoclones (DAKO, BD). The SF-36 test was estimated either after the end of the modulation course and 6 months later. Results: Initial self-certification of the quality of life in the monitored CUW group was certainly lower than both the one of the following group and of the population levels. Vibroacoustic modulation has in the CUW group lead to a certain improvement of the quality of life indices directly after the course and has brought the majority of the indices nearer to their population levels. The following group has not demonstrated any similar effects. In 6 months, the indices of the quality of life in the CUW group remained certainly higher than those in the following group. The extent of explication of the correcting index of the quality of life throughout the CUW group has expressed direct correlation with the extent of induced increase of the circulation pool of $CD34^+$ and TdT^+-cells after the modulation course. Conclusions: Deviations of psychosomatic condition of CUWs in remote period after the impact of the complex of factors of a nuclear catastrophe can be corrected by noninvasive mobilization of autologous haemopoetic stem cells into the blood flow and by induction of their subsequent differentiation, including the differentiation towards lymphoid lineage cells.

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