Rehabilitation of a Chernobyl Affected Population Using a Detoxification Method

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INTRODUCTION

The Chernobyl disaster resulted not only in the acute exposure of hundreds of thousands of people to various radionuclides, but also in a situation where a significant part of the population now lives permanently in radioactively contaminated territories. Many residents of the areas suffer from chronic stress and radiophobia.[1,2] The situation is exacerbated by relatively high levels of environmental chemical contamination. Despite this, the present health care in the affected areas is aimed mainly at the medical examination of persons and the diagnosis of diseases. Some programs dealing with specific aspects of the problem have been suggested and implemented, with inconclusive results.

Recently, a treatment modality has been examined which appears to offer the broad-spectrum approach necessary to address the range of problems resulting from the Chernobyl incident. The use of the detoxification method developed by L. Ron Hubbard has been described in the literature as a safe and effective means for removal from the body of specific toxic substances accumulated in the process of work activity. Detoxification procedures have been demonstrated to remove various xenobiotics, mainly with lipophilic properties,[3,4] and to remove chlororganic compounds.[5] A number of case histories[6] exist where the detoxification method produced a remission of physical and mental complaints that attending physicians have associated with the relative high radiation doses received by individuals ("liquidators") involved in cleanup work at the Chernobyl site.

In a cooperative effort between the Medical Radiological Research Center of the Russian Academy of Medical Sciences (MRRC RAMS) and Human Detoxification Services International (HDSI) of Great Britain, a group of twenty-four males aged 20 to 40 years old underwent detoxification using the Hubbard protocol. Participants were long-term residents of contaminated areas. The purpose of this work was to perform a broad examination of the effects of the human detoxification program as it applies to the removal of toxic substances, xenobiotics, and radioactive Cesium-137 (Cs-137) from the human body. In addition, an assay of the effects of the method on the physical processes of the body was performed.

DISCUSSION

The Hubbard detoxification program includes a daily regimen of one-half hour of moderate physical exercise (jogging), followed by up to four and a half hours of intermittent thermal procedures (i.e., moderate temperature sauna with periodic cool down). The detoxification regimen includes specific criteria by which the optimum rate of progress of each individual can be monitored and assured. Vitamin and mineral supplementation is administered based upon a standardized dosage scale modified by daily medical supervision and patient reporting of symptoms and perception of general health.

The use of psychodiagnostic testing and daily written debriefs enables the program administrator to establish the rate of progress of the patient and to determine the endpoint of the program more precisely. A typical course of treatment takes approximately two to three weeks.[7]

In this study, twenty-four males aged 20 to 40 years old from the Klimovsk District of the Bryansk Region participated. All of the participants were long-term residents of radioactively contaminated areas. The participants were randomly selected from the registry database of individuals with confirmed body burdens exceeding levels of 5,000 kilobecquerel (kBq) of radioactive cesium. For better uniformity of the group, the individuals were selected from a settlement with similar socio-economic levels.

Because of the requirements for relatively robust physical activity during the detoxification procedure, participants received preliminary examinations to ensure that they did not have physical or mental conditions that contraindicated participation in the procedure (e.g., oncological diseases, acute infections, mental disorders, decompensated somatic diseases, etc.). Three potential participants were excluded from the program, as they could not meet the above requirements.

In addition to standard physical examinations and clinical tests, special examinations were conducted in order to determine various physical responses to the program (i.e., extended biochemical blood tests; cellular and humoral immunity status evaluations, assay of thyroid hormone levels, estimation of antioxidant activity in the blood serum, and evaluation of the functional activity of neutrophils). Diagnostic psychological evaluations (including both objective and subjective evaluations of self-perception, activity, moods, and emotional reactions) were also conducted. When indicated on an individual basis, the participants were provided additionally with echocardiography, ultrasound, dopplerography, rheovasography, fibroscopy, x-ray imaging, caprologic examination, etc. A series of tests reflecting a functional state of the heart, liver, kidneys, and pancreas was conducted. In addition, lipid exchange and microelement metabolism were monitored. In all, twenty-two biochemical parameters of the blood were evaluated. In most cases, the parameters observed varied within accepted normal ranges. The most notable fluctuations were an increase of conjugated bilirubin in blood serum, the decrease of glucose and triglycerides, and the reduction of glutamiltransaminase activity.

The functional status of each patient's immune system was estimated from the level of immunoglobulins in serum (normal antibodies to rat erythrocytes detected by hemaglutination reaction) and from the determination of the functional state of the thymus gland through the use of a proprietary immunodeficiency analyzer ("Helper"). During the course of detoxification, each patient displayed a pronounced elevation of the intensity of spontaneous chemoluminescence of polymorphonuclear lymphocytes of the blood and increased antioxidant activity in the blood serum. These reactions are considered to be the response to elevated levels of toxins, free radicals, and peroxides in the blood. The most typical effects were such improvements as a decrease in heterophylic antibody titers and the normalization of thymic function. In addition, the positive changes in the immune parameters in patients were confirmed to still be present one year after the rehabilitation treatment.

No significant negative impacts on the immune system were noted. At the end of the detoxification program, the level of integral antioxidant activity returned to the initial activity in almost all the patients. A year after the completion of the program, the level of antioxidant activity was found to have increased 2-3 fold over the pre-detoxification levels. This finding suggests that detoxification may have rehabilitated the immune system, and that these levels reflect the body's now more successful resistance to the chemically and radiologically contaminated environment.

The thyroid system was studied on the basis of measurements of thyroid hormones (FT3, FT4, TSH). Starting from the initial days of the program, the thyroid system was shown to respond by the enhanced secretion of thyroid hormone hypophysis into the blood stream and, respectively, the decrease of free triiodothyronine level and, to a lesser degree, of thyronine. Two explanations of these observations exist. On the one hand, these results may be considered as the development of an acute phase of subclinical hypothyrosis in response to the physical challenges of the program (i.e., exercises, sauna, and high doses of vitamins) with the concurrent release of xenobiotics and other catabolic products into blood. On the other hand, hypothyrosis may also be explained by the extensive "spending" of thyroid hormones in response to the above-mentioned factors.

We believe that the thyroid gland responded adequately to the systemic stresses induced by detoxification. This view is supported by the fact that the thyroid function had re-normalized three weeks after the end of the program, and that long-term examinations performed nine and twelve months after the rehabilitation demonstrated that the level of thyroid hormones were within the limits of a normal physiological range.

A series of *in vivo* measurements of radioactive Cesium-137 were performed on all participants prior to and during the program. Rates computed from these measurements were compared to elimination rates expected from routine physical processes. While Cesium-137 was reliably detected in the sweat of all the patients, an evident acceleration of Cesium-137 elimination was not found. However, an earlier study involving a group of 14 children exposed as a result of Chernobyl did find significant acceleration of elimination. We suspect that this discrepancy may

be attributable to metabolic differences between children and adults, especially with regard to the metabolism of potassium (the pathway which cesium follows in the body.) This would be a fruitful area for further research.

This consultation of the patient's feelings and observations about how he is progressing on the program is a standard feature of the program. During this trial, additional objective testing methods were also utilized. The results of the evaluation of the participant's psychosocial states were particularly interesting. Analysis of data reveals a significant ($p<0.05$) positive change in the psychoemotional status of the program participants. Anxiety decreased from 23.48% to 9.09%, activity and "ability to work" increased from 40.9% to 46.96% and from 60.24% to 80.36%, respectively. This correlates with changes in individual status, levels, and ways of adaptation according to SMIL tests and SOC method. Such conditions are interpreted as a reduction of unproductive hypochondriac symptomatics, decrease of anxiety, increase of spontaneity and activity, increased self-confidence, renewed motivation for achievement, an increased "searching activity" and self-sufficiency. Results of the diagnostics of self estimation level showed that in most of the patients, positive changes occurred not only in the objective characteristics of psychological adaptation, but also in the subjective sense estimation of the individual as a person. No negative manifestations in mental status or organism comfort were noted. No decompensated disorders of major regulatory and life maintaining systems were revealed during the course of detoxification.

Follow-up examinations of the participants conducted at one and nine months after the completion of the program indicated that chronic diseases present at the start of the detoxification study were in lengthy remission, and an improvement in resistance to acute respiratory diseases was noted in a number of patients.

CONCLUSION

There is evidence suggesting that the program revitalizes the immune system and improves the general physical condition of the participant. In spite of its robust regimen, there is an absence of negative health effects. While out of normal range fluctuations of several key biochemical parameters were noted during the process, the deviated parameters renormalized upon completion of the course of treatment.

In addition, the detoxification program devised by Hubbard possesses a powerful psychotherapeutic potential that has been associated with significant improvement in the general health of the participant Increases in physical and mental endurance, activity level, and resistance against stress can be expected. The specific physical processes induced by the detoxification method have not been fully examined at this time. Further research into these areas would be valuable. Nevertheless, it is our opinion that the detoxification method holds great promise as a general treatment for a number of non-specific symptoms associated with living in the contaminated areas of the Chernobyl disaster.

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