



BY0000271

Long Term Follow-up of Irradiated Persons: Rehabilitation Process

Vladimir BEBESHKO, Alexander KOVALENKO, David BELYI
Scientific Center of Radiation Medicine, Melnikov St. 53, Kiev, Ukraine

Abstract. In patients after acute radiation syndrome as result of Chernobyl accident a gradually forming of late radiation pathology was observed in following years. It is connected with destructive changes in the tissues with low proliferative activity. Among some of these patients a deviation of biochemical data and different clinical variants of displasia of haemopoiesis have been found. Taking in account the specialities of development and evolution of nonstochastic effects the system of rehabilitation and prophylactics has been developed and improved. This system was directed on the reduce of the late radiation pathology development and it's clinical manifestation. This system is characterised by the complex of different medical and rehabilitation measures.

During post-accidental period somatic status of the patients who suffered from acute radiation syndrome (ARS) was characterised by increase of a frequency rate of the digestive, circulatory diseases and it's chronic flow, decrease of physical and mental capacity, transforming neurovegetative and psychoneurological disorders into organic neurovascular pathology (hypertensive disease, discirculatory encephalopathy, psychoorganic syndrome). Steady changes of brain's functional status with non-linear "dose-effect" correlation were revealed. Disablement reaches of approximately 90%.

In 40% of patients after ARS changes in the haemopoiesis (transitory and/or stable leukopenia, leukocytosis) and in 1/3 of the patients immune disorders were observed.

Changes in enzymes activity of antioxidant defence, activation peroxide oxidation of lipids processes, weakening of antiradical defence, affects of membranes and lizosomal enzymes (hydrolyses) activity increase were revealed in erythrocytes of patients after ARS. It is shown cells' destruction, severity of pathology and bad prognosis.

There were observed changes in hormonal supply of adaptation and reproduction processes (steady hypercorticism, hypohonadism, increase of polyamines in serum, atherogenic changes of lipid metabolism).

Six cases of hypothyreosis and seven cases of radiation cataract took place.

It is known that in pathogenesis of different organs and systems defeat the main roles are belong to activation of processes of peroxide oxidation of lipids (POL) and non-adequate antioxidant system (AOS).

So rehabilitation must be are based on following principles:

- to weaken lipid peroxide oxidation;
- to increase the activity of organism antioxidant system;
- correction of vitamin and microelements balance;
- to reduce the immunological insufficiency;

- to stabilise the vegetative status;
- to normalise the lipid metabolism (dislipidemia correction);
- to treat and prevent chronic disease of different organs and systems;
- to increase the physical and mental capacity;
- to propagandise the health way of life and refuse from bad habits and professional harmfulness;
- to have rational and balance nutrition;
- to treat in sanatoriums;
- to make succession in hospital, out-patient and sanatorium treatment.

The rehabilitation system was elaborating and improving during whole post-accidental period.

On the hospital stage patients received different combinations of drugs that contained radioprotective, antioxidant, antitoxin, membrane defence, haemostimulative, immunomodulative, vasoactive, metabolic, hepatotropic and sedative components. The rehabilitation, prophylactic and physiotherapy measures have the main role.

The rehabilitation system must be directed to prove oxidation homeostasis, normalise regulation and metabolism, prevent cells' membrane defeat (see Figure 1).

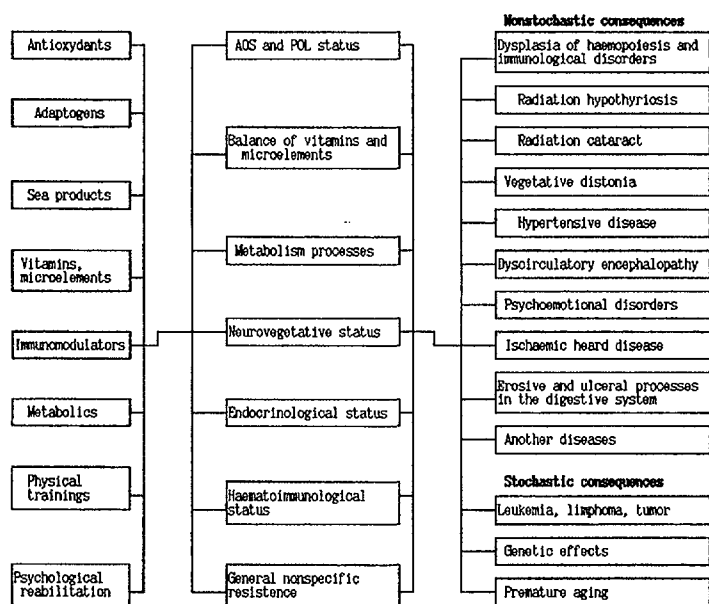


Figure 1. The main rehabilitation measures for the patients after ARS

On the outpatient department stage the main role belongs to the drugs treatment, physiotherapeutic treatment, massage and physical training.

In sanatoriums natural and climatic factors of treatment were used.

It is understandable that 10 year's term is not sufficient to do conclusions about effectiveness of the rehabilitation programme. Our experience shows positive effect of the rehabilitation in most of the patients after ARS. But 2 cases of myelodysplastic syndrome ended to death on 7th and 9th year after Chernobyl accident prove that the problem of radiobiology stochastic effects' prophylactic especially haematological oncopathology is a very significant problem till now.

An introduction of elaborated rehabilitation system directed to reduce late radiation pathology in patients after ARS has some difficulties. It is connected with deformation of mental, psychological and social status of these patients. Some of these patients continue to smoke, overeat and refuse physical training. So rehabilitation includes permanent explanatory and sanitary education.