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THE EFFECT OF CHRONIC RADIATION ON THE INTERNAL ORGANS OF THE BODY

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ANNOTATION

This article examines the incidence of cancer, as well as the specific clinic of chronic radiation for their treatment, morphofunctional changes in the heart caused by chronic radiation, as well as modern research methods.

Keywords

medicine, morphology, oncology, cardiologists, radioprotective agents, radionuclides, chloroform.

Acute radiation sickness is an independent disease that develops as a result of the death of predominantly dividing cells of the body under the influence of short-term (up to several days) exposure to significant areas of the body of ionizing radiation.

The most important features of acute radiation sickness include the strict dependence of its manifestations on the absorbed dose of ionizing radiation.

The clinical picture of acute radiation sickness is very diverse; it depends on the dose of radiation and the time elapsed after exposure.

Periods of acute radiation sickness

In the initial period of the disease, patients are concerned about general weakness, headache, dizziness, and heaviness in the head. Nausea, vomiting appear, and appetite disappears. The heart rate increases and decreases. In some patients, blood pressure decreases. There are signs of impaired cerebral circulation. The number of leukocytes in the blood increases, the number of lymphocytes decreases.

In the second period, which begins from the second to fifth day of the disease, patients feel satisfactory. They have mild focal neurological symptoms. Pulse and

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blood pressure are unstable. The number of leukocytes, lymphocytes and platelets in the peripheral blood decreases.

The following symptoms are characteristic of the third period of the disease:

- deterioration of well-being;
- general weakness;
- Temperature rise;

hemorrhagic rashes and necrotic changes in the palate, in the throat.

Due to intoxication, oxygen starvation and infection, nonspecific neurological symptoms appear. The number of leukocytes in the peripheral blood is rapidly decreasing. In severe cases of the disease, there are no reticulocytes and platelets in the blood. The number of red blood cells and hemoglobin does not change.

In the fourth period of the disease, the well-being of patients improves, body temperature decreases. In patients, appetite and sleep are normalized, hemorrhagic manifestations disappear, dead tissues are rejected. The pulse remains labile, but blood pressure is normalized. The general cerebral symptoms disappear, the function of the nervous system is restored. The number of leukocytes and reticulocytes in the peripheral blood increases. By the end of the third month, the number of red blood cells and hemoglobin is normalized.

Manifestations of acute radiation sickness

A typical manifestation of acute radiation sickness is damage to the skin and its appendages. Hair loss is one of the most striking external signs of the disease, although it has the least effect on its course. The hair of different parts of the body has different radiosensitivity: the most resistant hair is on the legs, the most sensitive is on the scalp, on the face, but the eyebrows belong to the group of very resistant ones. The final (without restoration) hair loss on the head occurs at a single dose of radiation above 700 rad.

The skin also has different radiosensitivity of different areas. The most sensitive areas are the armpits, inguinal folds, elbow bends, and neck. The zones of the back and extensor surfaces of the upper and lower extremities are significantly more resistant.

Skin lesion - radiation dermatitis - undergoes the appropriate phases of development: primary erythema, edema, secondary erythema, the development of blisters and ulcers, epithelialization.

Depending on the development of the clinical picture in the first stage of the disease, the severity of the lesion can be approximately determined.

Rad is a unit of absorbed radiation dose equal to the energy of 100 erg absorbed by 1 g of irradiated substance; X—ray (R) is a unit of exposure dose of radiation corresponding to the dose of X-ray or gamma radiation, under the action of which in 1 cm3 of dry air under normal conditions (temperature 0 ° C, pressure

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760 mmHg) ions are created that carry one electrostatic unit of the amount of electricity of each sign; rem is the biological equivalent of rad; fey (Gr) = 100 rad.

Treatment of acute radiation sickness strictly corresponds to its manifestations and is aimed at relieving its symptomatic manifestations and preventing the development of complications.

Radiation injury without the development of the disease does not require special medical supervision in a hospital.

With a mild degree, patients are usually hospitalized, but special treatment is not carried out, and only in rare cases, at doses approaching 200 rad, the development of infectious complications requiring antibacterial therapy is possible.

With moderate severity, treatment in a well-equipped hospital, isolation, and powerful antibacterial therapy during hematopoiesis depression are necessary.

In severe cases, along with bone marrow damage, there is a picture of radiation stomatitis, radiation damage to the gastrointestinal tract. Such patients should be hospitalized only in a highly specialized hematology and surgical hospital, where there is experience in managing such patients.

Medications for radiation sickness

The first aid kit for radiation infection includes drugs aimed at reducing the risk of developing radiation damage.

B-190, tab. 0.15 g. For emergency medical protection from external radiation exposure.

Potassium iodide, tab. 125 mg. To prevent the accumulation of radioactive isotopes of iodine in the thyroid gland.

Ferrocin, tab. 0.5g. To prevent the accumulation of cesium radioisotopes in the body and accelerate their excretion.

Latran, tab., coated, 4mg. To combat the main manifestations of the primary reaction under external radiation exposure.

The drug "Protection" package 50g. A decontaminating agent for removing radionucleides from the skin.

Hemostatic dressing agent "HEMOSTOP", 50g package to stop external bleeding of varying intensity.

Lioxazine, pack of 30g. Anti-burn hydrogel with prolonged analgesic and bacteriostatic action.

Hypoxene, caps. 0.25g. To counteract hypoxia, improve tissue nutrition.

Semax 0.1%, spray 3 ml. To maintain the activity of the central nervous system.

Vitamin C, tab. 0.5g To enhance immune protection, disease prevention.

Medicines available in pharmacies can be used to replace anti-radiation medicine kits.

Chronic radiation sickness is a disease caused by repeated irradiation of the body in small doses, totaling more than 100 rad. The development of the disease is determined not only by the total dose, but also by its power, i.e. the period of exposure during which the radiation dose was absorbed in the body.

The clinical picture of the disease is determined primarily by asthenic syndrome and moderate cytopenic (deficiency of certain types of blood cells) changes in the blood. By themselves, changes in the blood are not a source of danger for patients, although they reduce their ability to work.

Along with acute and chronic radiation sickness, a subacute form can be distinguished, which occurs as a result of repeated repeated irradiations in average doses for several months, when the total dose in a relatively short period reaches more than 500-600 rad. According to the clinical picture, this disease resembles acute radiation sickness

To prevent radiation sickness in the event of a threat of radiation exposure, partial shielding of body areas should be used and drugs should be taken that reduce the radiation sensitivity of the body and slow down the course of radiochemical reactions.

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