**Acute radiation sickness**. The modern classification of acute radiation sickness is based on the dependence of the severity and form of injury on the received radiation dose, which is firmly established in experiment and in the clinic.

Single doses of ionizing radiation leading to the development of acute radiation sickness:

**Easy (I) degree.** The primary reaction, if it has arisen, is insignificant and proceeds quickly. There may be nausea and single vomiting. The duration of the primary reaction does not exceed one day and is usually limited to several hours. With a mild degree, there is no distinct periodization of acute radiation sickness. The latent period lasts 30-35 days, and the onset of the peak period is determined mainly by hematology by a decrease in the number of leukocytes at 5-6 weeks to 1500-3000 in 1 μl and an increase in the erythrocyte sedimentation rate up to 10-25 mm / h. In this case, the general condition of the patient, as a rule, remains satisfactory. Asthenization may develop. Recovery occurs most often without treatment.

**Medium (II) degree**. The periodization of acute radiation sickness is clearly expressed. The primary reaction lasts up to one day. There are nausea and double or triple vomiting, general weakness, low-grade fever. The latent period is 21-28 days. The peak period begins either with the onset of subfebrile temperature, or with the appearance of a hemorrhagic syndrome (maybe both at the same time).

During the peak period, the number of leukocytes in the blood decreases to 500-1500 in 1 μl, platelets - to 30-50 thousand / μl, sometimes agranulocytosis develops, the erythrocyte sedimentation rate increases to 25-40 mm / h, infectious complications occur, bleeding, moderate alopecia, asthenic condition. When examining the bone marrow, hypoplasia is observed. Patients need specialized medical care.

**Severe (III) degree.** Violent primary reaction up to 2 days, nausea, repeated vomiting, general weakness, low-grade fever, headache. Possible hyperemia of the skin and mucous membranes. The latent period is 8-17 days. With the onset of the peak period, the general condition of the patient deteriorates sharply. Persistent fever, severe weakness, bleeding occur. From the end of the 1st week, the appearance of edema, hyperemia, erosion of the mucous membranes of the mouth and throat is possible. The number of leukocytes from the 2nd week drops to 300-500 per 1 μl, platelets - below 30 thousand / μl, the bone marrow is empty, acute radiation sickness - 40-80 mm / h. Severe infectious complications, hemorrhagic syndrome, anemia, toxemia, severe alopecia areata develop. Deaths are possible from the 3rd week. Patients need timely specialized treatment.

**Extremely severe (IV) degree.** The primary reaction proceeds violently, lasts 3-4 days, accompanied by indomitable vomiting and severe weakness, reaching adynamia, general cutaneous erythema, loose stools, collapse are possible. The latent period is indistinctly expressed, symptoms of the heat-up period, fever, and bleeding can be superimposed on the residual manifestations of the primary reaction. Severe infectious complications and gastrointestinal syndrome develop. Deaths occur from the 2nd week from the moment of defeat. The recovery of a very small number of patients is possible only as a result of bone marrow transplantation.

Depending on the possible manifestations, cerebral, toxic, intestinal and bone marrow forms of acute radiation sickness are distinguished.

**Cerebral form.** With irradiation in a dose of more than 50 Gy, the cerebral form of acute radiation sickness occurs. In its pathogenesis, the leading role belongs to the damage at the molecular level of the cells of the brain and cerebral vessels with the development of severe neurological disorders. Death occurs from respiratory paralysis in the first hours or the first 2-3 days.

**Toxic, or vascular-toxemic, form**. At radiation doses in the range of 20-25 Gy, acute radiation sickness develops, which is based on toxic-hypoxic encephalopathy caused by impaired cerebral haemodynamics and toxemia. With the phenomena of hypodynamia, prostration, darkening of consciousness with the development of stupor and coma, the affected die on the 4th-8th day.

**Intestinal form.** Irradiation at a dose of 10 to 20 Gy leads to the development of acute radiation sickness, the clinical picture of which is dominated by signs of enteritis and toxemia caused by radiation damage to the intestinal epithelium, impaired barrier function of the intestinal wall for microflora and bacterial toxins. Death occurs in the 2nd week or at the beginning of the 3rd.

**Bone marrow form.** Irradiation at a dose of 1-10 Gy is accompanied by the development of the bone marrow form of acute radiation sickness, which, depending on the size of the absorbed dose, differs in severity.