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Radiation sickness

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Treatments and drugs

By Mayo Clinic staff

The treatment goals for radiation sickness are to prevent further radioactive contamination, treat damaged organs, reduce symptoms and manage pain.

Decontamination

Decontamination is the removal of as much external radioactive particles as possible. Removing clothing and shoes eliminates about 90 percent of external contamination. Gently washing with water and soap removes additional radiation particles from the skin.

Decontamination prevents further distribution of radioactive materials and lowers the risk of internal contamination from inhalation, ingestion or open wounds.

Treatment for damaged bone marrow

A protein called granulocyte colony-stimulating factor, which promotes the growth of white blood cells, may counter the effect of radiation sickness on bone marrow. Treatment with this protein-based medication, which includes filgrastim (Neupogen) and pegfilgrastim (Neulasta), may increase white blood cell production and help prevent subsequent infections.

If you have severe damage to bone marrow, you may also receive transfusions of red blood cells or blood platelets.

Treatment for internal contamination

Some treatments may reduce damage to internal organs caused by radioactive particles. Medical personnel would use these treatments only if you've been exposed to a specific type of radiation. These treatments include the following:

- **Potassium iodide.** This is a nonradioactive form of iodine. Because iodine is essential for proper thyroid function, the thyroid becomes a "destination" for iodine in the body. If you have internal contamination with radioactive iodine (radioiodine), your thyroid will absorb radioiodine just as it would other forms of iodine. Treatment with potassium iodide may fill "vacancies" in the thyroid and prevent absorption of radioiodine. The radioiodine is eventually cleared from the body in urine.
- **Prussian blue.** This type of dye binds to particles of radioactive elements known as cesium and thallium. The radioactive particles are then excreted in feces. This treatment speeds up the elimination of the radioactive particles and reduces the amount of radiation cells may absorb.
- **Diethylenetriamine pentaacetic acid (DTPA).** This substance binds to metals. DTPA binds to particles of the radioactive elements plutonium, americium and curium. The radioactive particles pass out of the body in urine, thereby reducing the amount of radiation absorbed.

Supportive treatment

If you have radiation sickness, you may receive additional medications or interventions to treat:

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End-of-life care

A person who has absorbed large doses of radiation (6 Gy or greater) has little chance of recovery. Depending on the severity of illness, death can occur within two days or two weeks. People with a lethal radiation dose will receive medications to control pain, nausea, vomiting and diarrhea. They may also benefit from psychological or pastoral care.

Complications

References

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