Antiradiation vaccine : immunoprophylaxis of acute radiation syndromes - radioprotective efficiency.

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Current medical management of Acute Radiation Syndromes does not include immune prophylaxis based on Antiradiation Vaccine. Existing principles for the treatment of acute radiation syndromes are based on the replacement therapy and supportive therapy. A large amount of antigens isolated from bacterias (flagellin and derivates), plants, different types of venoms (honeybees, scorpions, snakes) can produce a nonspecific stimulation of immune system of mammals and protect against of irradiation. But only radiation toxins stimulate a specific antigenic stimulation of antibody synthesis. Active immunization by non-toxic doses of radiation toxins includes a complex of radiation toxins that we call the Specific Radiation Determinant (SRD). Immunization must be provided not less than 30 days before irradiation and it is effective up to three years and more. Active immunization by radiation toxins significantly diminishes mortality rate (100%) and improves survival rate up to 60% compare with 0% survival rate among irradiated animals in control groups. The SRD molecules were isolated from Lymphatic Systems of animals that were irradiated with high doses of irradiation and had clinical and laboratory picture of Cerebral Acute Radiation Syndrome, Cardiovascular Acute Radiation Syndrome, Gastrointestinal Acute Radiation Syndrome and Hematological Acute Radiation Syndrome. Our classification of radiation toxins include 4 major groups: 1.SRD-1, neurotoxic radiation toxins; 2.SRD-2, neurovascular radiation toxins; 3.SRD-3, non-Bacterial Gastrointestinal Radiation Toxins; 4.SRD-4, Hematopietic Radiation Toxins. Radiation toxins possess both toxic and immunological properties. But mechanisms of immune-toxicity by which radiation toxins stimulate development of ARS are poorly understood. We have compared lethal toxicity of radiation toxins and a potential for neutralization of their toxic activity by specific antibodies to radiation toxins. Blocking antiradiation antibodies induce an immunologically specific effect and possess inhibiting effects to radiation induced neuro-toxicity, vascular-toxicity, gastrointestinal toxcity, hematopoietic toxicity and radiation induced cytolysis of selected sensitive to radiation groups of cells. Blocking Antiradiation Antibodies are immunologically specific and can be produced by immunization with different radiation toxins isolated from irradiated mammals. We propose that Specific Antiradiation Antibodies targeted to radiation induced Toxins. Specific Antiradiation Antibodies neutralize toxic properties of radiation toxins. Antiradiation Antibodies in different phases of Acute Radiation Syndromes can compete with cytotoxic lymphocytes and prevent cytolysis mediated by cytotoxic lymphocytes .

Article published by EDP Sciences and available at http://www.radioprotection.org or http://dx.doi.org/10.1051/radiopro:2008514