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Assessment of immune and protein status in nuclear workers and population affected by radiation accidents

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Abstract

Ionizing radiation influence is accompanied by changes in immune system at cellular and subcellular level, causingdevelopment dysfunction and secondary immunodeficiency. The decrease of immune control, including anti-tumor defense, testifies to the need of medical-immunological examination of exposed individuals.It will enable the development of approaches for ummunocorrection and prophylaxis of immune disorders at pre-clinical stage of oncopathology and other somatic pathology.We consider itprospective to detect early informative radiation-induced markers of immune disorders and to form risk groups for personified follow-up.Immune homeostasis factors were studied in over 600 individuals (workers exposed to external γ- and internal α-radiation exposure in different doses or residents who never worked at nuclear enterprise).Using ELISA we defined the level of 30 regulatory proteins of different mechanisms in blood serum.Changes in protein content depending on type, dose and duration of exposure (growth factors TGFβ1, EGF, Ang-1, HER-2 etc., multifunctional interleukins and their receptors) were found.We used the specimens of blood serum stored at low temperatures in SUBI Radiobiological Human Tissue Repository.Content of effector and regulatory lymphocytes (17 indices) was studied as well. Medical data about the studied individuals were collected; it will enable to assess the connection of serum and membrane proteins content deviation with somatic pathology.

Biography

Evgenia Kirillova completed her PhD in 1976 at the age of 35 from Moscow Biophysics institute. Since 1969 she has been working in Southern Urals Biophysics Institute after graduation from Chelyabinsk State Medical Institute with specialization hematology. Since 2009 till present she has been the head of radiobiological department and radiobiological research laboratory. She is the principal investigator of the joint Russian-US research project *Establishment of the radiobiological human tissue repository of the Mayak workers exposed to radiation.* She has published over 80 papers in reputed Russian and US journals.