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Transgenerational genomic instability in children of irradiated in low doses parents

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Actual problem for modern medicine is the genetic risk of human exposure assessment not only in mutations, but also long-term effects. This induced transgenerational genomic instability in somatic cells of offsprings, whose parents were irradiated in low doses. Genetic risk assessment is especially important for children who are particularly at risk due to rapid growth and development of an organism, lack of balance of regulatory and protective mechanisms, and imperfection of immunity. Many years, we have been carrying out complex examinations of children with various pathologies. There was a significant increase in the average frequency of aberrant genomes in children as compared to control group. Most of the children, who carry repair activity of genomic DNA induced by γ- and UV-irradiation, is lower. In majority of children, combinations of deviations affecting different types of immunity were observed. The obtained results may specify on transgenerational genomic instability in these children. Basis of genomic instability may be the potential DNA lesions that do not lead to death of cells/apoptosis. They persist in subsequent cell divisions as DNA breaks and result in alterations in DNA conformation, chromatin structure and function, and gene regulation that lead to mutation, chromosome aberrations or disruption of epigenetic processes. Therefore, overall genomic make-up of the offspring is influenced by multiple aspects inherited maternally and paternally, including genotype as well as inherited DNA damage and epigenetic modifications. These events may be the cause of increased morbidity.

Biography

Anna Aghajanyan has graduated from the Erevan State University, Erevan, Armenia. She has completed PhD from Department of Ecological Genetics (Program Genetic and Radiobiology), N I Vavilov Institute of General Genetics Russian Academy of Sciences, Moscow, Russia. She has been the Senior Research Assistant in Laboratory of Molecular Biology and Cytogenetic Federal State Institution "Russian Scientific Center of Roentgen-Radiology" Ministry of Health, Moscow, Russia. Currently, she is working as a Senior Lecturer in Department of Biology and General Genetics, Institute of Medicine, RUDN University, Moscow, Russia. She has published more than 21 papers in reputed journals.

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