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THE RISK OF HEMOBLASTOSIS IN OFFSPRING OF RADIATION-DANGEROUS PRODUCTION STAFF

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Statement of the Problem: Parental preconceptional exposure is considered as one of the potential risk factors for hemoblastosis in offspring. Employees of Mayak Production Association (Mayak PA), the first nuclear cycle enterprise in Russia, constitute a unique cohort for calculating the carcinogenic risk in offspring. The purpose of this study is to evaluate the contribution of parental chronic preconceptional external gamma exposure to the risk of hemoblastosis in offspring.

Methodology & Theoretical Orientation: We conducted retrospective study using nested case-control approach. Source cohort included all people who were born in the city of Ozersk located near Mayak PA or became residents during 1949-2009. Cases were defined as incident of hemoblastosis occurred in person under age 25 in 1949-2009 (n=81), controls were matched on sex, year of birth, parent's age at birth (n=324). The excess relative risk (ERR) was calculated per unit dose of external gamma exposure with a 95% confidence interval using the EPICURE program module PECAN.

Findings: Acute leukemia prevailed in the structure of hemoblastoses. There was no significant dose-response found. The ERR/Gy coefficients were insignificant both in the analysis of the accumulated maternal dose: ERR/Gy = -7.95 (<0; 178.8), and while analyzing the accumulated paternal dose: ERR/Gy = -24.6 (<0; 153.9). Non-parametrical analysis by dose categories did not show any elevated risk as well.

Conclusion & Significance: The dose dependence between prolonged preconceptional external gamma exposure of parents and the risk of hemoblastosis in offspring was not revealed. However, a small number of cases of hemoblastosis in offspring up to the age of 25 limit the strength of the findings. The presence of predisposition to neoplasms in offspring and the manifestation of the effect in the form of solid cancer at older age cannot be excluded, which requires continued monitoring.

Biography

Svetlana Sosnina has extensive experience in practical healthcare as a pediatrician and Head of the pediatric department, experience in teaching medical disciplines. Area of her scientific interests comprises epidemiology, pediatrics, oncology, preventive health care. On the basis of unique cohort of employees of the Production Association Mayak Svetlana carries out a multifaceted assessment of health status in descendants of workers in radiation hazardous industries, as well as the assessment of radiogenic risks. This will improve medical monitoring of children's health and the radiation safety of Mayak personnel.

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