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KARYOLOGICAL PECULIARITIES OF CELL POPULATIONS IN THE THYROID GLAND IN PEOPLE EXPOSED TO RADIATION

As a result of the Chernobyl disaster radionuclides were released to the environment what led to radioactive contamination of the territory. Two radionuclides, shortlived ^{131}I and longlived ^{137}Cs , contributed a lot to the dose of radiation exposure of the population.

The aim of this research is to study nuclear abnormalities with internuclear chromatin bridges in thyrocytes of papillary thyroid cancer in patients of Gomel region.

Cytology studies were conducted on smears of thyroid biopsy samples acquired by diagnostic thyroid puncture. Smears were air-dried and fixed with Leishman stain. Then they were stained with azure-2eosin by Romanovsky. Incidence of thyrocytes with internuclear chromatin bridges was defined on 500-1000 cells. Studies were conducted in two groups of patients. The first group included 35 patients from Gomel region. All the patients were exposed to radiation in their childhood or adolescence in April - May of 1986 as a result of the Chernobyl disaster. In 1986 after the Chernobyl disaster radiation exposure dose on thyroid was measured in all 35 patients. Calculated absorbed exposure dose made up 1.2 Gy on average. The average age of Gomel patients at the time of the disaster made up 8.9 ± 1.7 years old. The average cancer incidence in the studied group made up 13.8 ± 1.8 years. The comparison group included 25 patients from Leningrad region whose pathohistological diagnosis was papillary thyroid cancer. In comparison to patients from Gomel patients from the comparison group didn't have any documented information that they were exposed to radiation in their medical history except for medical diagnostic tests. The average age of the comparison group of patients made up 45 years old (from 21 to 63), where there were 16 women and 9 men. Statistical data processing was carried out with a help of advanced analytics software package Statistica 8.0.

Internuclear chromatin bridges in thyrocytes were mainly found in binuclear cells, as well as between mononuclear cells being a part of cell complexes. They represent chromatin cords of different width and length which connect cell nuclei. The colour and structure of bridge chromatin corresponded to cell nuclei they connected.

Thyrocytes with bridges were present in 31 out of 35 patients from Gomel region. Most patients had 2% of thyrocytes with bridges. The average frequency of thyrocytes with bridges was $4.69 \pm 0.69\%$. In the comparison group the incidence of thyrocytes with internuclear bridges didn't exceed 2%. Thyrocytes

with bridges were not found in 50% of these patients. The average incidence of thyrocytes with bridges in the comparison group made up $1.10 \pm 0.23\%$ and was statically lower in comparison to Gomel group of patients ($p < 0,0001$, according to the Mann-Whitney criteria).

Thus presented results give the evidence that cell populations of thyrocytes in papillary thyroid cancer in Gomel region residents exposed to the release of radio iodine isotopes following first months of the Chernobyl disaster are characterised by an increased incidence of internuclear bridges in comparison to the comparison group from Leningrad region. Apparently, clonogenic cells which gave birth to malignant tumours in Gomel patients could appear to be genetically multiabberant cells as a result of radioactive effect of iodine and have increased genomic instability.

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CONGENITAL MALFORMATIONS: FREQUENCY OF OCCURRENCE, PRINCIPLES OF EFFICIENCY AND PRENATAL DIAGNOSIS

The study of the epidemiology of congenital malformations (CDF) is an actual problem of modern medicine. CDF occupy one of the main places in the structure of causes of stillbirth, infant and neonatal morbidity and mortality, childhood disability. The etiology of congenital malformations is heterogeneous and is associated with chromosomal abnormalities, gene mutations, environmental factors.

It is well known that adverse environmental factors contribute to complications of pregnancy and childbirth, physiological disruption of the relationship between the parent organism and the fetus. The result may be various forms of anomalies and malformations.

Given the widespread growth of hereditary diseases, making a significant contribution to the morbidity, disability and mortality in the population, as well as ekzavisimost CDF, in many countries, including the Republic of Belarus, specialized registries to study the frequency and dynamics of the CDF are established. These registers provide an opportunity to establish the appearance of new teratogens in the environment, provide an estimate of the necessary medical care for congenital and hereditary diseases, to evaluate the effectiveness of preventive measures.

According to the Belarusian register CDF in strict accounting group includes: anencephaly, spinal hernia, cleft lip and / or palate, polydactyly, reduction defects of limb, atresia / stenosis, esophageal atresia / stenosis of the anus.