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INTERNUCLEAR CHROMOSOME BRIDGES IN THYROCYTES OF PAPILLARY THYROID CANCER IN PATIENTS, SUBJECTED TO RADIOACTIVE IODINE ISOTOPES DURING FIRST MONTHS AFTER THE ACCIDENT AT THE CHERNOBYL NUCLEAR POWER PLANT

ABSTRACT. Background. Fallout from Chernobyl accident was primarily to iodine radioisotopes, with Iodine-131 (I-131) being the most predominant. Radioiodines accumulated following the accident could induce pathologic changes in thyrocytes. Internuclear chromatine bridges and ''tailed''nuclei - broken bridge fragments - are considered like cytopathological effects of radiation exposure as these abnormalities are formed from dicentric chromosomes, which are established markers of radiation exposure. **Objective.** To test the possibility that internuclear bridges and tailed nuclei are cytological markers of radiation exposure of the thyroid. **Methods.** We investigated thyrocyte nuclear abnormalities in cytological samples from fine-needle aspiration biopsy in papillary thyroid cancer patients exposed to radioiodine after Chernobyl accident (35 subjects from Gomel region, Belarus) and in papillary thyroid cancer of unexposed patients (25 subjects from Leningrad region, Russia). Nuclear abnormalities included internuclear bridges and ''tailed'' nuclei were examined. **Results.** Cells in papillary thyroid cancer of irradiated patients are characterized by the high frequency of appearance of hole nucleoplasmic bridges as well as broken bridges in comparison with the control group. The average frequency of thyrocytes with bridges in irradiated patients was almost 4 times higher than that in the unexposed group (4,69±0,69‰ vs. 1,10±0,23 ‰, $p<0.001$). The same contrast was observed in parameter "frequency of thyrocytes with "tailed" nuclei" (12,40±1,82 ‰ vs 3,68±0,39 ‰, ($p<0.001$)). **Conclusion.** Thyrocytes with internuclear bridges may be considered as markers of radiation effects on the thyroid gland.

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Kravtsov VIu, Ibragimova NV, Nikonovich SN, Nadyrov EA, Rozhko AV. [Internuclear chromosome bridges in thyrocytes of papillary thyroid cancer in patients, subjected to radioactive iodine isotopes during first months after the accident at the Chernobyl nuclear power plant]. Morphologia. 2015;9(4):37-42. Russian.

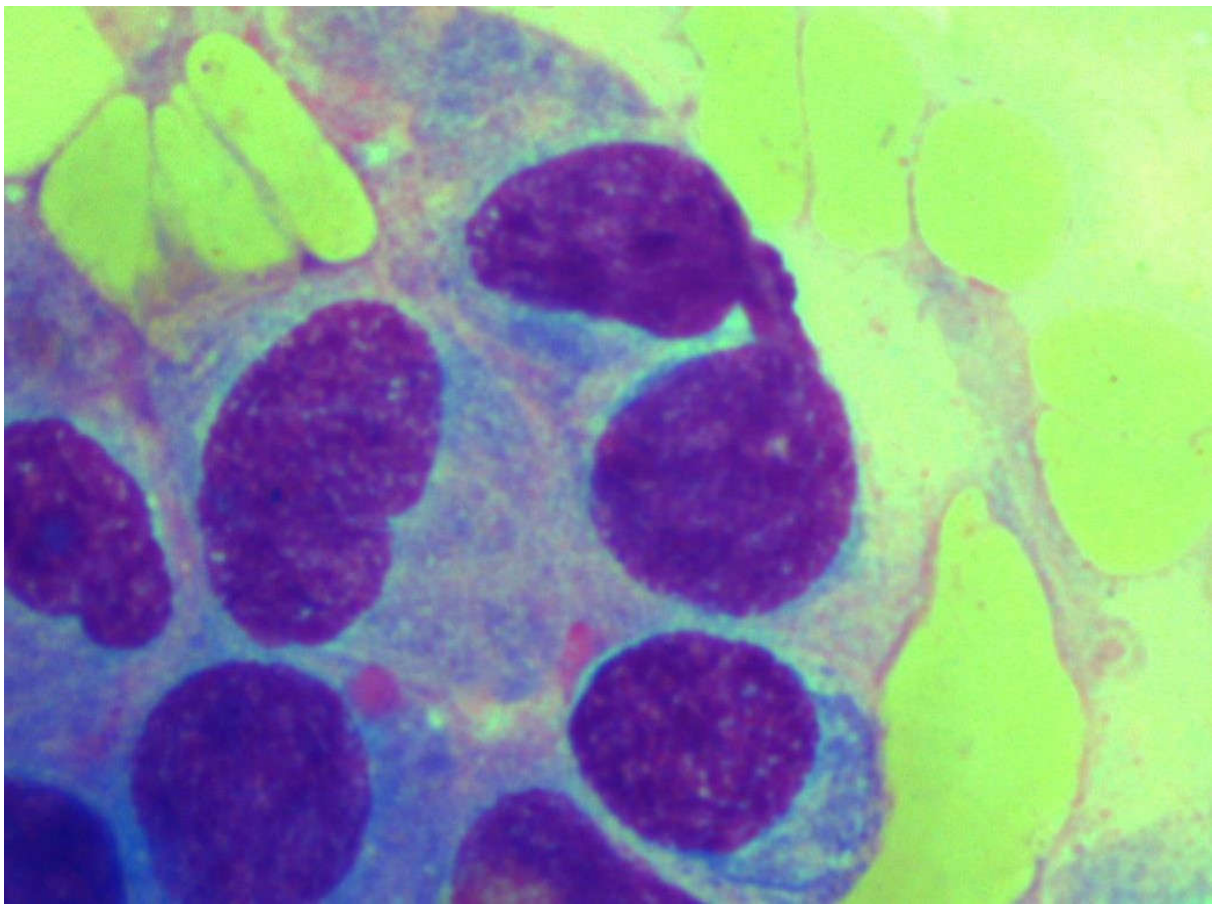

Fig. 1. Internuclear chromosome bridges in thyrocytes. Cytological preparation of papillary thyroid cancer fine-needle biopsy. Romanowsky azure II-eosin staining. ×1000.

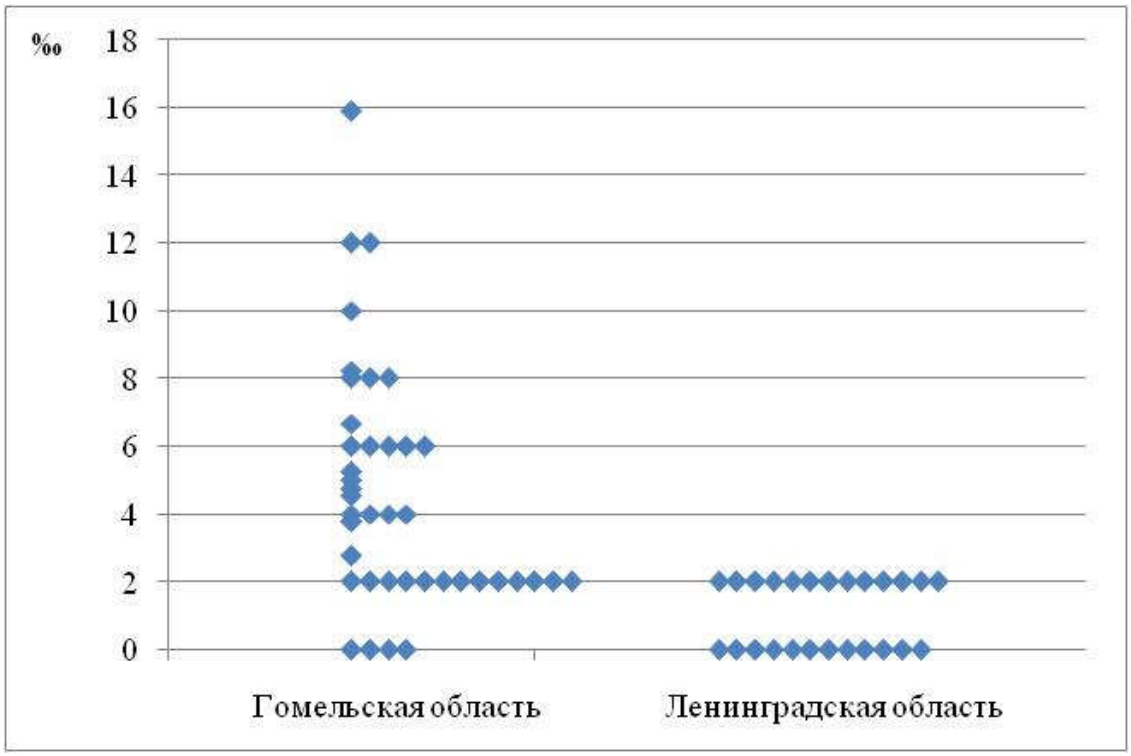

Fig. 2. Distribution of patients from Gomel and Leningrad regions by the parameter 'frequency of thyrocytes with internuclear bridges'.

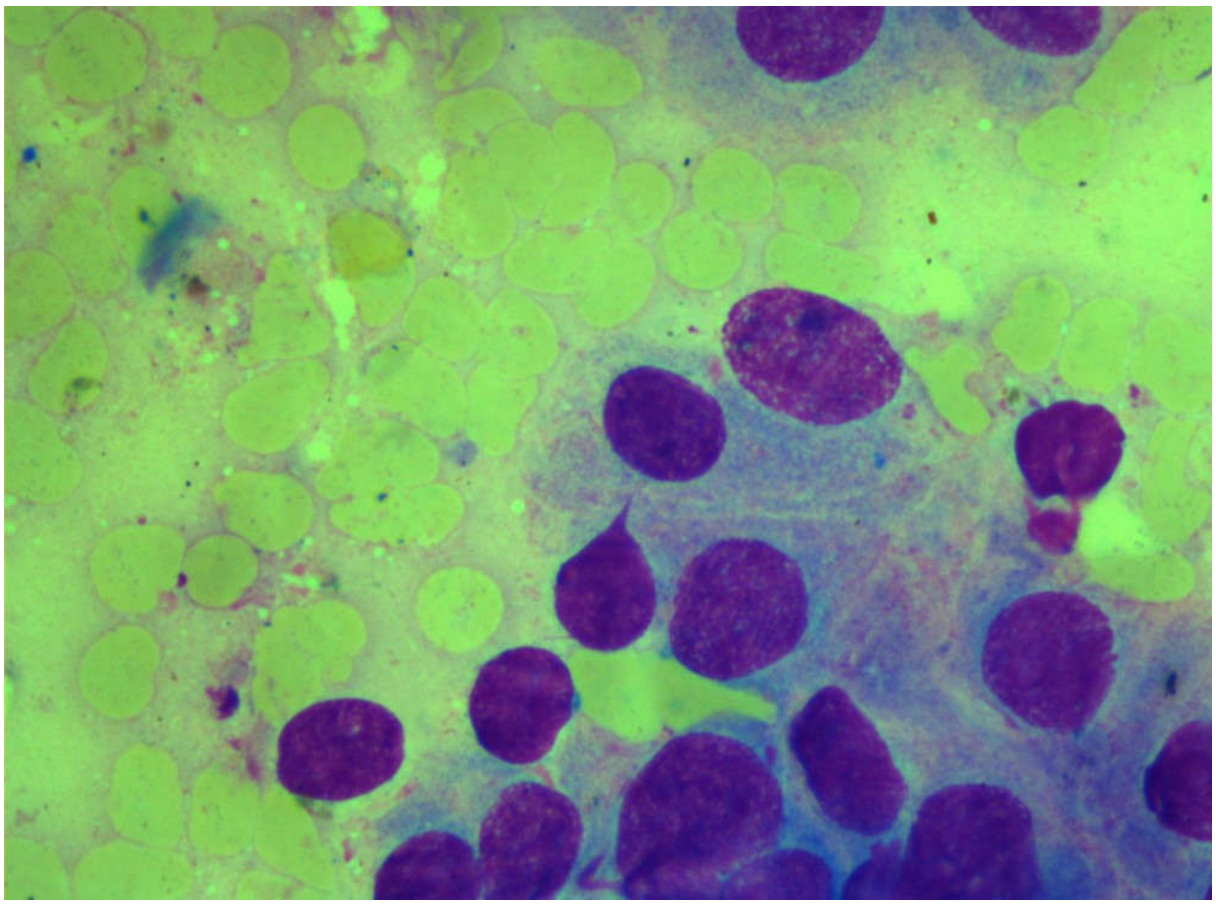

Fig. 3. “Tailed” nucleus – broken bridge in binuclear thyrocyte Cytological preparation of papillary thyroid cancer fine-needle biopsy. Romanowsky azure II-eosin staining. ×1000.

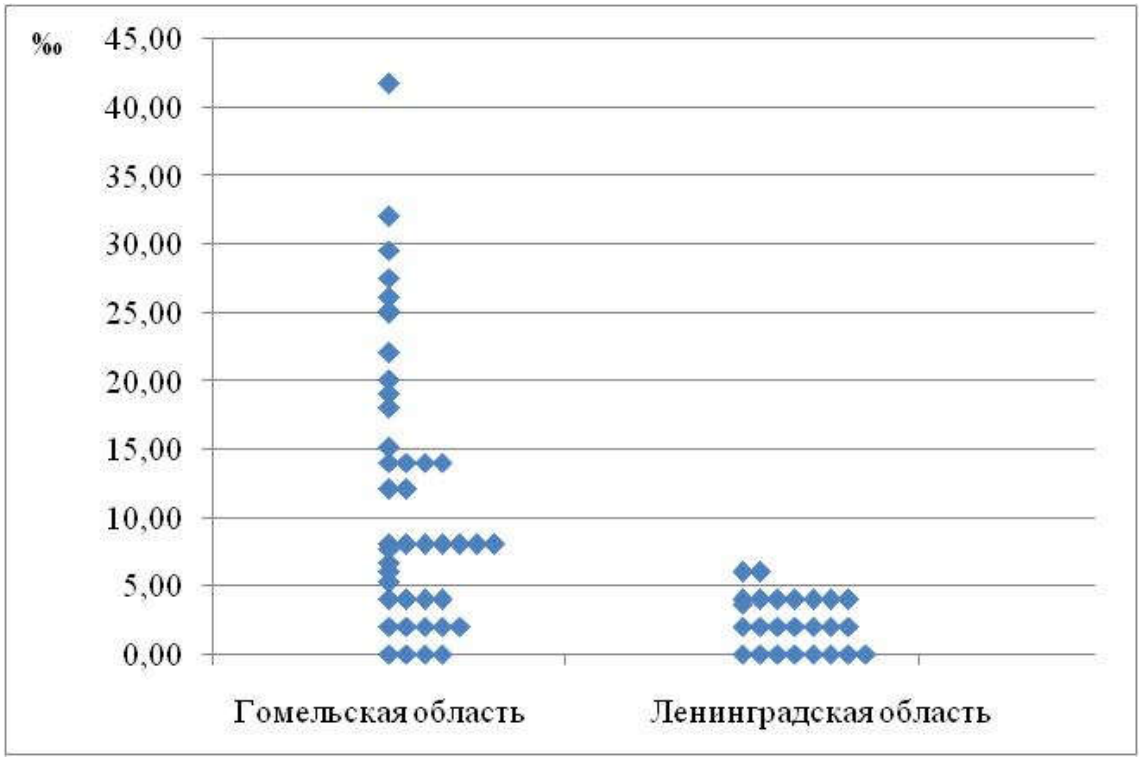

Fig. 4. Distribution of patients from Gomel and Leningrad regions by the parameter ‘frequency of thyrocytes with “tailed” nuclei’.

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