



**THYROID CANCER IN CHILDREN AND ADOLESCENTS IN UKRAINE  
AFTER THE CHERNOBYL ACCIDENT (1986-1996)**

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An analysis of thyroid cancer incidence in children and adolescents of Ukraine who were aged, at the moment of surgery, up to 18 years showed that for 5 years before the accident 59 cases (25 in children and 34 in adolescents) have been registered in this age group; but for the period 1986-1996 513 cases were registered, among which 321 cases in children aged up to 15 years at the time of surgery, and 192 in adolescents aged 15 to 18 years. It follows from this that the rate of increase of incidence in children exceeds the same index in adolescents. It should be noted that among 321 cases of children with thyroid cancer 309 were revealed in children born before the accident, 3 cases in children born in the first months after the accident (radiation exposure of thyroid occurred during the last trimester of the mother's pregnancy), and only 9 cases were revealed in children who were born after the Chernobyl accident.

The incidence per 100 thousand children's population for the whole Ukraine for 1981-1985 fluctuated within 0.04-0.06, 0.05 on average. In 1986-1990 this index increased by 2.2 times (0.11), in 1991-1995 by 7.8 times (0.39), and in 1996 by 10.8 times (0.54) as compared to average rate before the Chernobyl accident. This increase of incidence took place mainly at the expense of 5 northern regions of Ukraine: Kiev, Chernigov, Zhitomir, Cherkassy, Rovno regions and city of Kiev, where the highest contamination with iodine radioisotopes was noted as a result of the accident. In these 6 regions the average annual incidence in the above regions for 1981-1985 made only 0.009 (one case of cancer in a child from Cherkassy region). In 1986-1990 the incidence increased in the mentioned regions until 0.18, what is twice as high as the total rate for the other 21 regions (0.09). In 1991-1995 the incidence already made 1.28 and in 1996 - 1.85 (8.4 times as high as in other regions).

An analysis of distribution of operated children and adolescents depending on their age at the time of the accident, showed that in 1986-1990 the proportion of children who were aged, at the time of the accident, up to 4 years made 13.4%, from 5 up to 9 years 23.2% (in all 36.6%). In 1991-1995 the proportion of children being aged, during the accident, up to 4 years increased by 3 times, until 40.0%, and of those aged 5 to 9 years by 1.8 time, until 42.1%. The total rate was twice as high as the previous one, reaching 82.1%. In 1996 the proportion of children aged 0 to 4 during the accident, among children and adolescents with thyroid cancer, already made 60.3%. It follows from this that, despite increasing time interval after the accident and in spite of an increase, from year to year, of the mean age of the subjects operated on, the increase of incidence mainly took place at the expense of children who were aged in 1986 up to 4 years and whose thyroid gland was the most sensitive to the radioactive iodine effect.

An analysis of the incidence rate depending on thyroid exposure dose showed that, for the children operated up to the age of 15 years, a constant increase of additional incidence at the post-latent period was noted practically in all dose zones. The most important increase is noted for the zone with the highest mean exposure rate: more than 1 Gy.

All the above-mentioned data on geographical and age distribution of thyroid cancer cases, their relationship with thyroid exposure dose received during the accident, point to the radiation genesis of thyroid cancer.