

Clinical Characteristics and Future Trends of Thyroid Cancer in Belarus

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As a result of the Chernobyl accident, practically all population of Belarus has been subjected to the "iodine strike." Thyroid internal radiation doses have been determined for a huge number of the people, among which the greatest group with maximum doses consisted from children and adolescents. Thyroid radiation doses were composed due to radionuclide intake together with polluted milk and leafy vegetables into human organism, and also of air and dust inhalation.

More than 2.6 million of children and adolescents (age from 0 to 18 years at the time of the accident) and about 6.8 million of adults have got radiation doses from 0.05 to more than 1 Gy. Within the period of 20 years after the Chernobyl accident (1986 - 2006), thyroid carcinomas have been revealed in about 13 thousand patients (Table 1).

Table 1. Total number of the patients with thyroid carcinomas treated in Thyroid Cancer Center between January, 1, 1986 and June, 30, 2006

Residents of	Children	Adolescents	Adults	Total
Belarus	766	507	11,722	12,995
Other countries	6	3	274	283
Total	772	510	11,996	13,278

A reliable increase of thyroid cancer incidence in the cohort of exposed children and adolescents has been revealed starting from 1990 and the minimal latency of the radiation-induced cancer for this category of the exposed persons equals to 4 years. For the people exposed at the age of 19 years and older, a sharp increase in the thyroid cancer incidence has been stated since 1992. The minimum latent period of the development exposed due to the Chernobyl accident is equal to 6 years.

In 2005 the crude incidence rate for thyroid carcinomas has reached 10.7 per 100 000 population as compared with 1.4: 100,000 in 1985. The crude mortality rates for 20 years remain stably low within 0.4 to 0.6: 100,000. Thus, in Belarus population, the number of persons who had to undergo special kinds of therapy for thyroid cancer is

being accumulated. These patients are subject to regular medical check-up, a lifelong thyroxin suppressive therapy, rehabilitation, frequent control of TSH and thyroglobulin levels, radioiodine diagnostics and radioiodine therapy.

Within the first ten years after the Chernobyl accident a fast increase in the number of primary cases of thyroid carcinomas in children has been marked. Nowadays in Belarus only sporadic cases of malignant tumors in children are revealed. By now the Republican Center of Thyroid Cancer gained the experience of treatment of 772 children and 510 adolescents. The cause-specific five-year and ten-year survival rate amount to 99.4 % and 99.2 % respectively.

In childhood or adolescent cases it has been established that there never have been found anaplastic carcinomas and very few patients had medullary cancer. The prevalent pathology of thyroid cancer for them is papillary carcinoma, constituting 95.3 % in the structure of all malignancies of the given site. In 72.9 % of these patients at the stage of primary diagnostics, the tumor did not exceed 20 mm in the largest measurement and staged as T1 carcinomas, however in 2/3 of cases metastases have been revealed in neck lymph nodes. The distant metastases were diagnosed in 12 % of pediatric patients. This per cent is 6 times higher than in adults therefore there is a reason to consider that differentiated thyroid carcinomas in children and adolescents have an aggressive behavior. But at the same time there are no doubts that the good long term results of in these cases are caused by tumor sensitivity to radioiodine therapy.

The current and relatively new medical problem is treatment and monitoring in case of combination of thyroid cancer and pregnancy. By now the Thyroid Cancer Center has an experience with more than 150 such patients who require individualization of medical tactics and all-round studying of the state of health of newborns. Besides in recent years the number of pregnant women has been increased, who in childhood have been operated upon, received repeated radiotherapy courses and underwent hormonal therapy.

The current epidemiological tendency is revealed in a continuous increase of incidence rate in adults, especially, in patients with an unfavorable prognostic class at the age over 45 years. In this sam-

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ple there are found cases of aggressive forms of thyroid cancer with a high potential mortality rate. According to our experience more than 40 % of medullary carcinomas in Belarus are usually detected at IV stage of disease, the tumor is low-sensitive to chemotherapy and irradiation as well. The probability of a complete recovery of the given category of patients is determined, almost exclusively, by the quality of a primary surgery, since the C-cell carcinoma proved to be persistently recurrent. Five-year and ten-year survival rate of patients with medullary carcinoma makes 76.4 % and 58.8 %, respectively.

In anaplastic carcinomas the prognosis should be always estimated as extremely unfavorable. By our data in these cases, a two-year

survival rate makes only 5.8 %, and the median of lifetime equals to 5.1 months. The overwhelming majority of patients die within the first year of observation, no matter which method of treatment has been used. Numerous attempts to improve life span rate due to the usage of non-conventional radiation modes and intensive combined chemotherapy up to now turned out to be unsuccessful.

Estimating the current levels of incidence in Belarus regions, it should be noted that there is no distinct correlation of incidence rate with the residence in the southern areas of Belarus. The absence of "the geographical factor" allows considering thyroid cancer as a national problem, though the territorial distribution of primary cases of the disease, undoubtedly, requires the further in-depth study.