

Follow-up of Thyroid Cancer Patients from Belarus after Radioactive Iodine Therapy

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After the Chernobyl reactor accident on April 26th 1986, the incidence of thyroid cancer in children and adolescents living in contaminated areas of the Ukraine and Belarus increased significantly. Totally, between 1986 and 2002, 4600 cases of thyroid cancer have been observed among those aged 0-18 years at the time of the reactor accident. It is estimated, that approximately 40% of those cases are associated with radiation exposure and 60% are spontaneous cases.

Starting with 01/04/1993, a joint project on the combined treatment with surgery and radioiodine has been launched. Thyroid surgery was performed in the Center for Thyroid Tumors in Minsk, Belarus, and radioiodine therapy followed in Germany at the Universities of Essen (until the end of 1994) and afterwards the University of Würzburg.

Until the end of 2005, 242 children and adolescents had received totally in 987 1-week courses of radioiodine therapy. The number of girls was 144 and the number of boys 98. The age at the time of radioiodine therapy ranged from 7 to 19 years with a mean age of 12.7 ± 2.5 years. Histologically, 236 of the cancers had been classified as papillary and only 2 as follicular cancers. 152 out of those 242 patients suffered from locally advanced tumor stage pT4 (33%). In nearly all of the children (235 out of 242 = 97%) lymph node metastases in the neck were detected during surgery or follow-up. 104 out of 242 children (= 43%) revealed distant metastases (nearly all

of them to the lungs). Up to now, 234 patients received more than one course of radioiodine therapy, so that the effectivity of the preceding treatment course could be checked by a consecutive radioiodine wholebody scan. The median follow-up time is now 3.5 years. Totally, 131 children (56%) are in complete remission, 70 children (30%) in stable partial remission and 33 children (40%) in partial remission. With respect to the subgroup of children with distant metastases, the rate of complete remissions is 35%, stable partial remissions 34% and partial remissions 31%. All of the children and adolescents treated with radioiodine are alive.

Concerning transient side effects, gastritis with nausea and vomiting is usually especially in small children immediately after application of radioiodine. In 20-30% of the children, acute sialadenitis occurs because of radioiodine uptake in the salivary glands. In 20% of the children reversible leuco- and or thrombopenia is observed. Concerning late side effects approximately 10% of female and male adolescents show signs of impairment of gonadal function. In up to 30% of the males oligo- or asthenozoospermia occurs. A permanent Sicca-Syndrom is to be seen in less than 10% of the patients and in up to 5% of patients with lung metastases radiological signs of pulmonary fibrosis. Fortunately no single case of leukemia has been observed during the follow-up of now more than 10 years of our treatment program.

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