

X-RAY COMPUTED TOMOGRAPHY IN THE EVALUATION OF INTRATHYROID HORMONE FORMATION IN DISEASES OF THE THYROID GLAND

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Purpose of Study: To study the diagnostic capabilities of X-ray computed tomography (CT) for the evaluation of intra-thyroid hormone formation in diseases of the thyroid gland.

Material and Methods: Total number of patients was 236 women with thyroid disease, which caused disorders of the thyroid gland function. The control group consisted of individuals of 2 groups who 1) denied contact with iodides; 2) had contact with iodides. All patients were examined in accordance with the standards of care to conduct the evaluation of thyroid CT density in HU.

It should be emphasized that the thyroid density in HU, determined at CT, is directly proportional to the concentration of intra thyroid stable iodine. In turn, 80% of the element iron is in the phenyl ring of thyroid hormones. Consequently, the thyroid density index in HU reflects the level of hormone formation and the reserves of iodinated thyroid hormones directly into the thyroid gland. In this regard, it should be noted that the thyroid gland is the only endocrine organ that, after the synthesis of hormones lasting 50 days, stores them in the thyroid structure (colloid of thyroglobulin) and secretes thyroid hormones into the blood at the request of the body. Based on the literature data and the results of our own research, for all regions of Russia we have proposed the following fluctuations in thyroid density in HU, reflecting

the euthyroid status and favorable future of the thyroid function: from 85 to 140 units. In those cases when there is an iodine-induced dysfunction of thyroid function, the thyroid density index in HU is increased above 140. If the synthesis of thyroid hormones (primary hypothyroidism) or synthesis is impossible, but pathological secretion with a lack of fixation in thyroid globulin collagen (diffuse toxic goiter with thyrotoxicosis), the thyroid density in HU decreases less than 85 units. It is important to note that in the determination of TSH in the blood, fasting, the use of a number of drugs, stress, sleep deprivation, severe illnesses of the subject can lead to errors in determining the concentration of TSH and thyroid hormones (due to so-called non thyroidal factors) in the direction of their change as in hypothyroidism with the presence of euthyroidism in fact. In this case, normal thyroid density in HU indicates euthyroidism.

Conclusions: One time assessment of thyroid density in HU with CT and blood serum TSH level makes it possible to perform differential diagnosis between iodine induced and true thyroid dysfunction and also to correct for the error in determination of TSH concentration as a result of the influence of non thyroidal factors. Evaluation of thyroid density in HU in CT should be used for screening the risk of thyroid dysfunction and for determining the need for individual and population iodine prophylaxis and monitoring its effectiveness in order to prevent iodine induced transient disorders of thyroid function.

Biography

Ramchandra Sargar have completed his graduation (MBBS) from Smolensk State Medical University, Russia and clinical residency from People's Friendship University of Russia (RUDN University). Currently he is doing scientific research (PhD) from same university, (RUDN University). Professor Irina Kurnikova is curator. He have published the articles not only in Russian journals (Web and Science) but also in International Journals (Scopus).

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