

MORPHOLOGICAL ASPECTS OF THE THYROID GLAND IN VARIOUS FORMS OF ITS PATHOLOGY

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Abstract: A comparison of the structure of the thyroid gland in its non-tumor pathology is described. The quantitative parameters of thyroid cells in macro-microfollicular colloid nontoxic goiter, macro-microfollicular colloid toxic goiter, diffuse toxic goiter and autoimmune thyroiditis were analyzed on the basis of histological material of patients. The features of the microstructure and dimensional characteristics of cells in each type of thyroid pathology were identified.

Key words: thyroid gland, micromorphology, quantitative signs, non-tumor pathology of the thyroid gland.

Introduction.

The increase in the frequency of thyroid pathology determines the relevance of studying the regional structural features of this organ and the clinical and morphological features of benign and malignant tumors, the differential diagnosis of which at the preoperative stage is extremely difficult [1]. In the structure of thyroid pathology, the first place in frequency is occupied by macro-microfollicular colloid nontoxic goiter. Other types of pathology are much less common. Many authors emphasize the influence of the features of the mineral composition of the environment on the structure and function of the thyroid gland. The content of mineral pollutants of the environment is associated with a statistically significant correlation with the incidence of certain types of thyroid pathology: there is a strong correlation between the zinc content in the soil and the incidence of diffuse goiter and hypothyroidism, nitrite content in water and the incidence of thyrotoxicosis, iron content in water and the incidence of hypothyroidism [4-9].

Material and methods of research

The study material was thyroid preparations of 121 patients aged 21 to 60. The study material was divided into four groups:

- 1) macro-microfollicular colloid non-toxic goiter;
- 2) macro-microfollicular colloid toxic goiter;
- 3) diffuse toxic goiter;
- 4) autoimmune thyroiditis.

The longitudinal and transverse dimensions of follicular cells and their nuclei, the longitudinal and transverse diameter of follicles and colloids were measured on micrographs. Based on these data, the area of the colloid and follicles, the volume of cells and nuclei were determined. The obtained data were processed by variational statistical methods using the IBM SPSS Statistics v22 program.

Research results and their discussion

The study showed that the greatest height of the epithelial cell in thyroiditis, with diffuse toxic goiter, it was less by 7%. The lowest cell height was observed in toxic and non-toxic goiter transformation and averaged. The width of the epithelial cell was also maximal in thyroiditis, with diffuse toxic goiter it was less by 6%, with nodular non-toxic goiter - by 9%. The smallest cell width was observed in toxic nodular goiter (by 14%). The volume of the epithelial cell was maximal in thyroiditis, with diffuse toxic goiter less by 13%, with nodular non-toxic goiter - by 31%. The smallest cell volume was observed in toxic nodular goiter. The height of the nucleus was of the greatest importance in diffuse toxic goiter, in thyroiditis it was less by 0.5% and in non-toxic goiter - by 26%. The lowest core height was observed in toxic goiter transformation (by 27%). The width of the nucleus was greatest with diffuse toxic goiter, with thyroiditis less by 0.2%, with nodular non-toxic goiter - by 26%, the smallest width of the nucleus was observed with toxic nodular goiter (by 47%). The volume of the nucleus was maximal in autoimmune thyroiditis, in diffuse toxic goiter - by 0.1%, in nodular non-toxic goiter - by 57%. The smallest core volume was observed in toxic nodular goiter (by 79%). The volume of cytoplasm was maximal with nodular non-toxic goiter, with nodular toxic goiter - by 4%, with thyroiditis - by 5%, the minimum volume of cytoplasm was observed with diffuse toxic goiter - on average. The nuclear cytoplasmic index was maximal with diffuse toxic goiter, with thyroiditis it was 51% less, with nodular non-toxic goiter - by 83%, the smallest core volume was observed with toxic nodular goiter (by 91%). The average longitudinal size of the follicles was maximal with nodular non-toxic goiter, with toxic nodular goiter it was 44% smaller, with diffuse toxic goiter - by 47%, with thyroiditis - by 60%. The average transverse size of the follicles was maximal with nodular non-toxic goiter (on average 295.97 ± 2.96 microns), with toxic nodular goiter it was 37% smaller, with diffuse toxic goiter - by 41%, with thyroiditis - by 54%. The average longitudinal size of the colloid was maximal with nodular non-toxic goiter, with toxic nodular goiter it was 41% smaller, with diffuse toxic goiter - by 47%, with thyroiditis - by 61%. The average transverse size of the colloid was maximal with nodular non-toxic goiter, with toxic nodular goiter it was 45% smaller (on average, with diffuse toxic goiter - by 48%, with thyroiditis - by 61%). The average area of the follicle was maximal with nodular non-toxic goiter, with toxic nodular goiter it was less by 67%, with diffuse toxic goiter - by 71%, with thyroiditis - by 83%. The average colloid area was maximal with nodular non-toxic goiter, with toxic nodular goiter it was 67% smaller, with diffuse toxic goiter - by 72%, with thyroiditis - by 84%. The relative amount of colloid was maximal with nodular non-toxic goiter, with nodular toxic goiter, with diffuse toxic goiter, with autoimmune thyroiditis - on average. The relative amount of epithelium is maximal with diffuse toxic goiter, with nodular toxic goiter, with thyroiditis, the minimum amount was observed with nodular non-toxic goiter. The maximum relative amount of the stromal component was observed in diffuse toxic goiter, the minimum amount in nodular non-toxic goiter. The largest relative amount of leukocyte infiltration was observed in autoimmune thyroiditis, in diffuse toxic goiter, in nodular toxic goiter, the minimum amount was detected in nodular non-toxic goiter. Thus, a comparison of the morphometric features of follicular epithelial cells in non-tumor thyroid diseases showed that nodular non-toxic goiter is characterized by small epithelial cell sizes, a small nucleus, but at the same time large follicles with a predominance of colloid. Nodular toxic goiter has similar cell sizes, but a slightly smaller nucleus and a smaller follicle size. With diffuse toxic goiter, the cells are larger, the nuclei are also larger, but the size of the follicle is relatively small, and the ratio of cellular and colloidal components differ slightly. In autoimmune thyroiditis, cells and nuclei are similar in size to diffuse toxic goiter, but the follicles are smaller in size and there is a

predominance of leukocyte infiltration.

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