Despite the general world wide tendency towards the increase in frequency of thyroid diseases among children, in Ukraine prevalence and incidence of a disease of this endocrinological pathology have been almost constant during last years, or even have been decreasing without any reason. This can be caused by the fall level of timely diagnosis. In 2014 the prevalence of endocrinological diseases among children from 0 to 17 years old was 4.35%, the same as in recent years. At the same time, the first place in their structure took diffuse non-toxic goitre class I (52.95%). But this index is dissimilar in different regions of Ukraine: it is larger in regions, which have been affected the most by Chernobyl disaster. Other thyroid diseases were registered notably less often (diffuse non-toxic goitre class II and III took 3.7%, thyroiditis – 1.14%, hypothyroidism – 0.56%, nodular goiter – 0.39%, thyrotoxicosis – 0.07%, postoperative hypothyroidism – 0.03% of cases).

In the modern period, thyroid diseases are diagnosed with the aid of generally accepted clinical-anamnestic, laboratory and instrumental methods, which are differ by their informational content and invasiveness.

Clinical-anamnestic methods include specification of complaints, history of illness and objective examination both the general state of a child and conditions of target organs.

Examination of the thyroid gland includes visual and palpatory assessment of its size, shape, consistence. But pathological changes of thyroid are not always immediately followed by change of the shape, volume or texture of organ. In addition, changes in texture of thyroid are diagnosed even more frequently, than its dysfunction. That’s why ultrasound diagnostics has became the main non-invasive method of thyroid assessment. It includes morphological analysis, time-to-time survey, functional Doppler sonography, color flow and energy mapping. During this survey the structure of organ is examined, contours, echogenicity, blood circulation with subsequent calculation of the thyroid volume.

Normally, the thyroid echogenicity is medium and structure is uniform in case of the ultrasonic diagnostics. Diffuse toxic goitre and autoimmune thyroiditis cause equable decreasing of thyroid echogenicity and intensification of blood
circulation. Ultrasound diagnostics is used to confirm thyroid aplasia. Diffuse goitre can be diagnosed if thyroid is equably extended and there are not any local consolidations or nodes. If some nodes are visualized in the extended thyroid gland – it is nodular goitre. But organ may be not extended, but to have some cysts, nodes or tumors. So it is necessary to exclude malignant nodes, especially after Chernobyl disaster. The ultrasound diagnostics of thyroid neoplasms which differ in density and have decrease in their elasticity has acquired special topicality. These parameters can be estimated by thyroid sonoelastography. In addition, fine-needle biopsy of thyroid nodes is done under the control of ultrasound examination. The ultrasound visualization of lymph nodes within the neck allows to find local metastases of malignant neoplasm.

The condition of children hypothalamic-pituitary-thyroid system is characterized by the level of thyroid stimulating hormone. Indicators of free thyroxine and triiodothyronine are used for the determination of the thyroid function. Their reference values respectively are 9-25 pmol/l and 4-8 pmol/l.

For diagnostics of autoimmune thyroid diseases and their differentiation from non-autoimmune thyrotoxicosis it is necessary to determine the content of antithyroid antibodies of different specificity. These include: thyroglobulin antibodies (anti-TG), thyroid peroxidase antibodies (anti-TPO), thyroglobulin and thyroid peroxidase antibodies (anti-TGPO), thyroid stimulating hormone receptors antibodies.

Radionuclide scintigraphy with special drugs is a quite informative method for diagnostics of different forms of toxic goitre and determination of the localization of ectopic thyroid, retrosternal goitre or metastasis. The dynamic thyroidolymphoscintigraphy is also one of the useful radioisotope methods. The accumulation and distribution of isotopes indicates the functional activity of thyroid, the nature of its lesion (diffuse or nodular), the aplasia, ectopia or dystopia of rudimentary tissue occurrence.

Computed tomography and magnetic resonance imaging of thyroid gland, X-rays of the esophagus with contrast also are useful methods of visualization. These
examinations also help to diagnose retrosternal goitre and determine its localization among the surrounding organs, diagnose displacement or compression of the trachea and esophagus.

Blood circulation of thyroid can be estimated by reothyrography, termography, polarography. If the results of instrumental methods make us suspect the malignant tumor, but an aspiration biopsy has no results it is necessary to perform a biopsy of the lymph node or incisional biopsy of the tumor for histological and histochemical study of removed tissue.

Thus as a result of the analysis of literature the modern methods of diagnosing thyroid diseases were contemplated. Knowledge of diagnostic capabilities of clinical and medical history, laboratory, invasive or low- and non-invasive methods improves early diagnosing of endocrine diseases such as congenital and acquired hypothyroidism, diffuse and nodular goitre, thyrotoxicosis (hyperthyroidism) and autoimmune thyroiditis. It helps to identify comorbidity of target organs and to provide treatment for children the most effectively, to increase their socialization, quality of life and to prevent the development of disability.