

CLINICAL AND LABORATORY FEATURES OF THYMOMEGLY IN YOUNG CHILDREN

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Abstract

Thymomegaly - hyperplasia of the thymus and its hypofunction, accompanying a number of diseases of childhood. Minor thymomegaly is asymptomatic; pronounced thymus enlargement may manifest with vital organ compression syndrome, lymphoproliferation syndrome, immune and endocrine-exchange disorders [6,7,8,9].

Keywords: Thymomegaly, thymus gland, immune system, chest radiography, endocrine disorders.

Introduction

Diagnosis of thymomegaly requires the participation of a pediatric immunologist, ultrasound of the thymus gland, chest radiography, investigation of T-link immune system parameters and hormonal status. Children with thymomegaly are recommended to take general health measures, multivitamins, biostimulants, and glucocorticosteroids if indicated [6,7,8].

Thymomegaly is an excess of the mass and volume of the thymus gland in children over the age limits with preservation of the normal histologic structure of the organ. Thymomegaly is found in about 13-34% of infants and 3-12% of children over 3 years of age. After 5-6 years of age, the number of children with thymomegaly decreases significantly. In boys, thymomegaly is diagnosed 1.5-2 times more often than in girls. Children with thymomegaly are a risk group in pediatrics for the development of allergic, endocrine, autoimmune and oncologic diseases, sudden infant death syndrome, therefore they need special care and additional monitoring by a pediatrician and pediatric allergist-immunologist.

The thymus or thymus is the central organ of the immune system and a gland of internal secretion. The thymus transforms progenitor cells (pretymocytes) into T-lymphocytes, which are involved in the regulation of cellular and humoral immunity. In addition, the thymus gland secretes more than 20 biologically active substances, including hormones and hormone-like substances that





regulate metabolism, hematopoiesis, blood calcium and sugar levels, phosphorus in skeletal muscles, growth and puberty.

The thymus has its maximum mass at the time of birth (4.4% of body weight); its growth continues until 15 years of age, after which the organ undergoes gradual age-related involution - replacement of glandular tissue with fatty and connective tissue [3,4,5,6].

Various endogenous and exogenous factors, as well as their combination can lead to the development of thymomegaly. Genetic determination of thymomegaly and its association with HLA-antigens B15, B18, B27 has been proved. A certain role in the formation of thymomegaly in the child plays an aggravated obstetric history of the mother (abortions and miscarriages in the anamnesis, toxicosis of pregnancy, Rh conflict, late pregnancy, etc.); harmful effects of drugs, alcohol, X-rays on the fetus; pathology of the newborn and early childhood (asphyxia, prematurity, birth trauma, respiratory distress syndrome, conjugation jaundice, neonatal sepsis), etc. Thymomegaly is a characteristic manifestation of lymphatic-hypoplastic diathesis [9,10,11,12,13,14].

Researchers distinguish congenital (primary) and acquired (secondary) thymomegaly. In congenital thymomegaly, the thymus gland is formed correctly, but is enlarged in size, which is accompanied by a decrease in its secretory function, hyperplasia of lymphoid tissue and dysfunction of the neuroendocrine system [15,16].

Acquired thymomegaly develops due to primary lesions of other endocrine glands: hypocorticism due to Addison's disease, trauma, inflammatory or tumor lesions of the adrenal cortex, hypothalamic syndrome in occlusive hydrocephalus, vasculitis, brain tumors, etc.

In addition, enlargement of the thymus gland may be functional (e.g., in acute respiratory viral infections, pneumonia, etc.); in these cases, after recovery, the thymus size and immunohormonal parameters are normal. Organic thymomegaly is associated with a direct lesion of the thymus gland [7,8,9].

Examination of children with thymomegaly is carried out by a pediatrician, pediatric immunologist, pediatric endocrinologist and includes several stages (clinical and anamnestic, instrumental and laboratory). When assessing the objective status of a child with thymomegaly, attention is paid to the perinatal history, constitutional data, and past diseases [5,6,7,8,9].

Laboratory parameters in thymomegaly are characterized by a decrease in the subpopulation of T-lymphocytes (CD3, CD4, CD8); a sharp decrease in the number of mature B-cells, low levels of IgG and IgA, increased - IgM and IgE; decreased concentration of ACTH, cortisol, increased levels of STH and TTG, some increase in the concentration of parathyroid hormone [7,8,9,10].

Children with thymomegaly should be registered with a pediatrician, pediatric allergist-immunologist, endocrinologist; undergo annual laboratory and instrumental examination. Possible measures to prevent thymomegaly include the exclusion of perinatal harm. Children with an enlarged thymus gland should avoid stress, contact with infectious patients, undergo timely preventive treatment courses [7,8,9,10,11].





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