

19. THE EFFECTS OF PEDIATRIC GRAVES DISEASE ON THE CARDIOVASCULAR SYSTEM

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Introduction. Graves disease (GD) is the most common cause of hyperthyroidism in pediatric patients. Incidence density increases during childhood, with a peak incidence of 0.48 cases per 100.000 persons for boys and 3.01 cases per 100.000 persons for girls, aged 10 – 14 years. It is a very rare cause of thyrotoxicosis in children younger than age 5 years. The most common association with childhood GD is a history of other family members with thyroid disease.

Aim of study. The mechanisms of hyperthyroidism leading to cardiac disease are diverse with effects on cardiac contractility, vascular and cardiac electrophysiology. The purpose of the study is to point out the clinical effects of GD on the cardiovascular system in childhood and adolescent period, also to identify the laboratory and imaging particularities of the disease.

Methods and materials. The study includes 14 selected patients admitted to the pediatric endocrinology department of the IMSP ICM (Public Medical Sanitary Institution Scientific Research Institute of Mother and Child Health Care) during the years 2018 – 2021. 4 boys and 10 girls aged 11 – 17 years were analyzed. The research was based on the clinical examination of the patients and on the results of laboratory and instrumental investigations.

Results. In this study has been determined 4 (28,5%) cases with a history of family members with thyroid disorders. Because GD leads to hyperactivity of the sympathetic nervous system that affects cardiovascular hemodynamics, it was reported in 13 cases (92,8%) tachycardia, the most common ECG abnormality, and patients subjectively reported palpitations. Hypertension was identified in 4 (28,5%) cases, predominantly demonstrating high systolic blood pressure, as a result of low vascular resistance. Intraventricular conduction delay in the form of incomplete right bundle branch block was present in 2 (14,2%) of patients. The hyperthyroidism status is expected to trigger shortened cardiac repolarization and can predispose to ventricular arrhythmia, that is why 2 patients (14,2%) presented the early repolarization syndrome on ECG. Diagnosis of GD is straightforward in a patient with biochemically confirmed thyrotoxicosis – elevated levels of free thyroxine and/or triiodothyronine, identified in 14 (100%) cases and suppressed TSH levels – 14 (100%) cases. GD is an immune – mediated disorder that results from the production of thyroid – stimulating immunoglobulins by stimulated B lymphocytes and therefore had been evaluated on the level of thyroid antibodies to 8 patients. It was determined that 4 (57%) of 7 cases presented positive antithyroglobulin antibody, 6 (75%) of 8 cases – positive thyroid peroxidase antibody, and 3 (100%) of 3 cases – positive thyrotropin receptor antibody. A hypervascular and hypoechoic thyroid gland at ultrasound was identified in 8 (100%) of 8 cases.

Conclusion. The cardiovascular system is a major target of thyroid hormones action. Therefore, thyroid dysfunction causes remarkable cardiovascular derangements. As a result, thyroid status should be systematically investigated in patients with GD, in order to avoid complications.