INCIDENCE OF INCREASED REACTIVE OXYGEN SPECIES ACTIVITY AND RAPID HYPOTHYROIDISM DEVELOPMENT IN PATIENTS WITH GRAVES' DISEASE DURING ANTITHYROID TREATMENT

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Introduction. Autoimmunity plays an important role in the development of thyrotrophin (TSH) receptor antibodies and the pathogenesis of Graves' disease (GD). The mechanism underlying the functioning status of thyroid stimulating antibodies (TSAb) and antibodies that block TSH action (TBAb) is still unclear. Clinical case. A-54-year-old woman was admitted to the hospital with manifest hyperthyroidism. She was diagnosed with GD. She had no ophthalmopathy similar to GD and had high titer of plasma TSH receptor antibodies (30,34 ED/L (0—1,0). The following characteristics of spontaneous chemiluminescent (CL) and zymosan-induced (ZiCL) activity of blood neutrophilic granulocytes (BNG) was studied: time to maximum (Tmax), maximum intensity value (Imax), reflecting the maximum reactive oxygen species (ROS) level synthesis, area under the curve (S), describing total ROS synthesis. In our patient we observed the increased Imax during luminol-dependent spontaneous- and Zi-CL. Index S changed depending on the kinetics of CL: from low index during luminol-dependent spontaneous to high S level in luminol- and lucigenin-dependent ZiCL. In her thyroid ultrasonography there were the alternation of hypoechoic and increased echogenicity areas, the volume of the gland were 31.03 ml. Color flow Doppler imaging showed typical findings of GD. Antithyroid drugs therapy were initiated in total daily dose of thiamazol 30 mg. Under additional beta-blockade the patient's condition significantly improved. After 3 weeks antithyroid treatment the clinical features and hormonal control of thyroid status demonstrated hypothyroidism, TSH – 37,96 mIU/ml (0.2—3.2), fT4 — 5.9 pmol/L (9.0—22.0). The block and replaced scheme was performed. We measured that the kinetics of BNG CL was varied with thyroid status and accompanied by increased of Imax in luminol-dependent spontaneous- and Zi—CL. Variability of S in luminol-dependent spontaneous CL markedly depressed, suggesting an immunosuppressive effect of the antithyroid drugs, and, than, increased only during lucigenin-dependent ZiCL. In contrast with manifest thyrotoxicosis, the hypothyroidism under antithyroid treatment of our patient entailed by high index T during luminol-dependent spontaneous and lucigenin Zi—CL. Sequentially after reversion euthyroid state and 2 weeks before radioiodine therapy (RIT) all medications were discontinued and given as treatment a fixed dose of 500 MBq radioiodine. Patient became hypothyroid at the 12 day post RIT and was maintained on 100 mcg of levothyroxine daily. **Conclusion.** This case demonstrates that both, the hyperthyroid state and antithyroid drugs mediated immunity upon BNG activity, release assay for ROS cytotoxicity. This phenomenon implies that pathogenesis of GD might be associated not only with self-limited changing TSAb or TBAb antibodies, but, also, the antithyroid drugs immunosuppressive exerted effects upon the BNG activity should be considered.

KEYWORDS: Graves' disease, antithyroid treatment, autoimmunity.

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EFFECT OF SUPPRESSION OF PUBERTY AND CROSS-SEX HORMONE THERAPY ON BONE TURNOVER MARKERS AND BMAD IN TRANSGENDER ADOLESCENTS

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Background. Puberty is highly important for the accumulation of bone mass. Bone turnover and bone mineral density can be affected in transgender adolescents when puberty is suppressed by gonadotropin-releasing hormone analogues (GnRHa), followed by treatment with cross-sex hormone therapy (CSHT). **Objective**. To investigate the effect of GnRHa and CSHT on bone turnover markers (BTMs) and bone mineral apparent density (BMAD) in transgender adolescents. **Material and methods.** Thirty four female-to-males (FtMs) and 22 male-to-females (MtFs) were divided into a young and old pubertal group, based on the bone age of 14 years in the FtMs and 15 years in the MtFs. All patients received GnRHa triptorelin. CSHT was prescribed in incremental doses from the age of 16 years. FtMs received testosterone ester mixture and MtFs were treated with 17-β estradiol. BTMs P1NP, osteocalcin and ICTP and the BMD of lumbar spine (LS) and femoral neck (FN) were measured at three time points. Furthermore, BMAD and Z-scores were calculated. **Results.** P1NP and 1CTP decreased during GnRHa treatment, indicating decreased bone turnover. Osteocalcin showed an aberrant pattern. A low BMAD Z-score of both FN and LS was observed in the MtFs at start of GnRHa treatment. The decrease in bone turnover upon GnRHa treatment was accompanied by an unchanged BMAD of both FN and LS, however BMAD Z-scores of predominantly the LS decreased. Twenty-four months after CSHT the BTMs P1NP and ICTP were even more decreased. During CSHT BMAD Z-scores increased and returned towards normal, especially of the LS. **Conclusion.** Suppressing puberty by GnRHa leads to a decrease of BTMs in transgender adolescents. The increase of BMAD and BMAD Z-scores predominantly in the LS as a result of treatment with CSHT