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CHARACTERISTIC OF THYROID STATUS IN OVERWEIGHT AND OBESE YOUNG PEOPLE WITH INSULIN RESISTANCE

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Objectives:

Introduction. Due to the widespread occurrence of both obesity and hypothyroidism, physicians need to be especially attentive to the possible thyroid dysfunction in obese patients.
Aim. The relationship between thyroid hormones and obesity in combination with insulin resistance in young people is not fully understood.

Methods:

Materials and methods. . The study included 68 patients with a mean age of 16.21 ± 2.67 years, of whom 81% were women, and 19% were men. 15 healthy adolescents were examined as control group.
HOMA insulin resistance index above 2.77 Table 1 describes the clinical, laboratory, and ultrasonographic characteristics of the cohort. 32 patients had a BMI between 28 and 30 kg/m2. 36 had a BMI more than 30 kg/m2. A total of 57.3% of the patients met the criteria for Metabolic Syndrome.
Ultrasonography of the thyroid gland, TSH, free thyroxine (fT4.), free triiodothyronine (fT3), thyroglobulin antibodies and AT-TPO were carried out. Statistic analysis was made using the program Statistika (ver 2009 for Windows), criteria Mann-Whitney, Wilkinson and χ^2.

Table. Thyroid parameters in patients with overweight and obesity and insulin resistance (HOMA-IR ≥ 2.77)

	1 group (overweight) (n=32)	2 group (obese)(n=36)	p
TSH (μIU/mL) (median)	1.69 (0.95, 2.28)	3.91 (3.59, 4.98)	**0.021**
fT4 (ng/dL) (median)	0.78 (0.71, 0.88)	0.41 (0.33, 0.62)	**0.045**
fT3 (ng/dL) (median)	1.3 (1.12, 1.43)	1.4 (1.21, 1.44)	0.052
TPO-Ab (UI/mL) (median)	5.4 (3.5, 22.5)	29.6 (27.4, 38.8)	**0.023**
Tg-Ab (UI/mL) (median)	1.6 (0.9, 2.1)	2.4 (1.2, 3.5)	0.056
Thyroid volume (mL) (median)	14 (11.4, 14.7)	14.3 (11.7,14.9)	0.715

HOMA-IR: homeostasis model assessment of insulin re sistance index; TSH: thyroid-stimulating hormone; fT4: free thyroxine; free triiodothyronine (fT3); TPO-Ab: antithyroid peroxidase antibodies; Tg-Ab: antithyroglobulin antibodies
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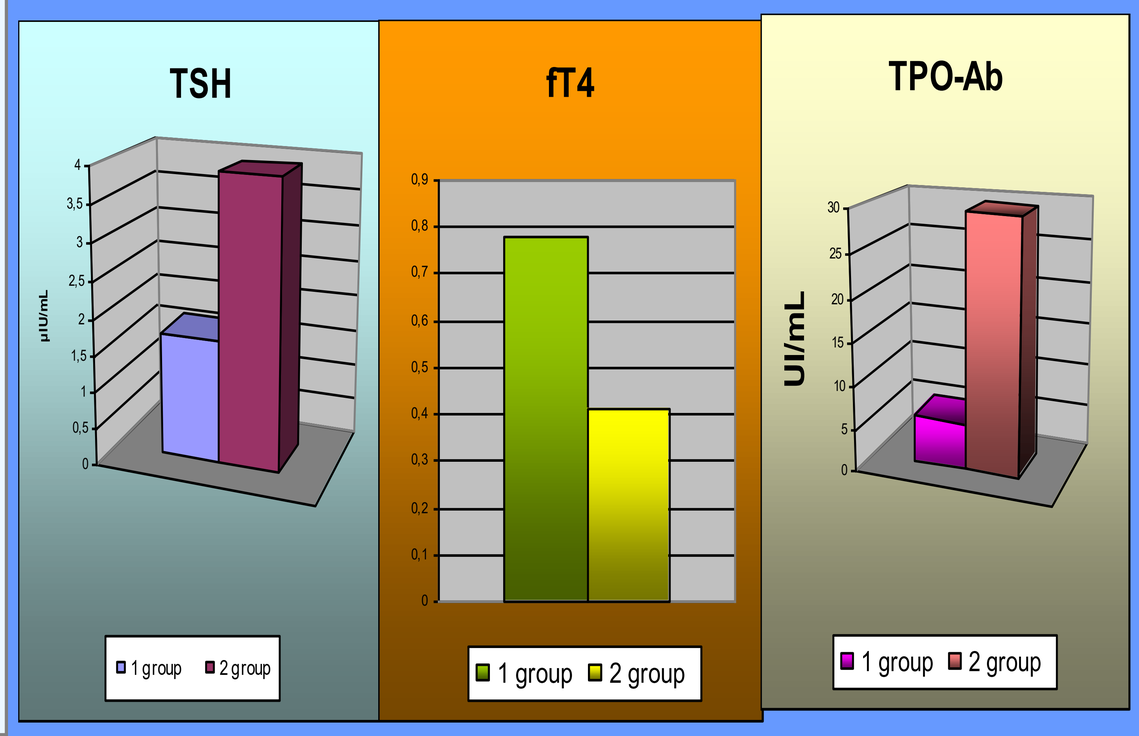

Results:

Results and discussion.
On thyroid ultrasonography the enlargment of size and echogenicity change of thyroid tissue ($p>0.05$) were established.
In the 1 group nonsignificant ($p>0.05$) increase of TSH were found.
In 2 group the concentration of fT4 was significantly reduced and a TSH was significantly increased ($p<0.05$).
The nonsignificant increase ($p>0.05$) of AB-TPO in patients who are overweight and a significant ($p<0.05$) in patients with obesity were established.
This trend did not concern to thyroglobulin antibodies. Positive correlation between the concentration of TSH and BMI and insulin resistance index HOMA-IR was registered.
It was also established correlative relationship between TSH, leptin and adiponectin.
Significantly lower concentrations of adiponectin are detected in patients of 2 group compared with the 1 group and the control group, respectively 6,1 ± 3,9mkg/ml, 8,9 ± 4,2mkg/ml and 17,1 ± 4,9 mg/ml ($p <0.05$).
In 22.7% of young people with obesity and insulin resistance recorded a significant increase in thyroid stimulating hormone combined with relative reduction of free thyroxine, which is the sign of hypothyroidism.

Conclusions:

Conclusion.
Revealed thyroid insufficiency, combined with the stimulation of antibody production is probably one of the mechanisms of development and progression of not only obesity, but also insulin resistance in young people, dictating the need for its early detection and appropriate correction.

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Conflict of Interest: The authors declare no conflict of interest.

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