THE ROLE OF IODINE DEFICIENCY AND LEPTIN IN THE ETIOLOGY OF SUBCLINICAL HYPOTHYROIDISM IN OBESE CHILDREN AND ADOLESCENTS

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Introductıon

Subclinical hypothyroidism (SH) has an incidence of 3.2 to 22.2% in obese children. The etiology of increased prevalence of SH is still unclear in obese individuals.

Aim

The aim of the study is investigate the relation of SH with iodine deficiency, serum leptin levels and metabolic parameters in obese children and adolescents.

Materials-Methods

One hundred and fifty nine obese and 54 healthy children and adolescents were included in the study. Anthropometric measurements, biochemical and thyroid function tests were performed. Insulin resistance was diagnosed according to the results of oral glucose tolerance test (OGTT). Thyroid autoantibodies, leptin and urinary iodine levels were measured. Patients with a diagnosis of autoimmune thyroiditis were excluded from the study. Metabolic syndrome (MS) was diagnosed according to the modified World Health Organization and the International Diabetes Federation criteria. The iodine deficiency was defined with the urinary iodine levels <100μg/L.

Results

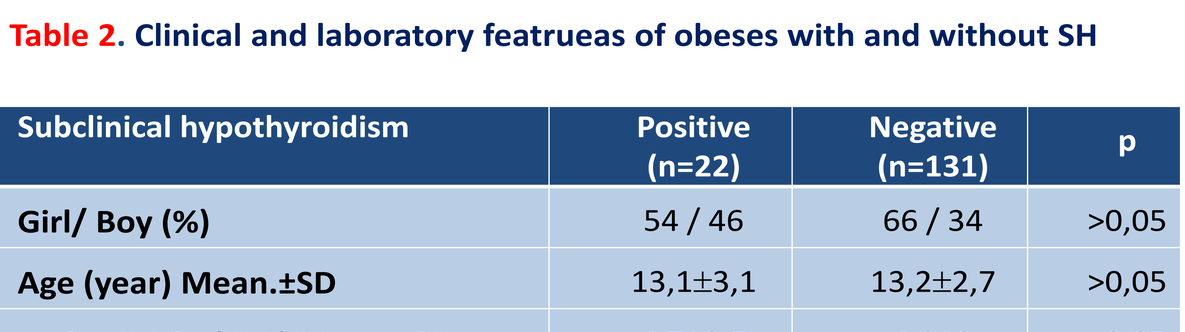
In the study group, MS was detected in 37 (24.2%), SH in 22 (14.4%) and iodine deficiency in 56 (36.6%) patients. In the control group none of the patients had SH, although 22 (40.7%) patients had iodine deficiency. Mean urinary iodine concentrations and iodine deficiency rates were not different between the groups. There were no significant difference between obese patients with or without SH for age, gender, BMI-SDS, body fat mass, HOMA-IR, urinary iodine levels, iodine deficiency rates and serum leptin levels. SH rates were similar in obese patients with or without IR. SH rate was significantly higher in obese patients with MS than those obese without MS.

Table 1. Clinical and laboratory features of obese and control groups

	Obese (n=153)	Control (n=54)	p
Girl/ Boy (%)	65 / 35	56 / 44	>0,05
Age (year) Mean.±SD	13,2±2,7	12,3±2,8	>0,05
BMI (SDS) Mean.±SD	3,2±0,5	0,2±0,9	**<0,01**
Waist Circumference (cm) Mean±SD	106,1±12,5	67,3±9,3	**<0,01**
AST (U/L) Mean.±SD	27,2±13,5	24,1±7,2	>0,05
Kolesterol (mg/dL) Mean.±SD	168,7±35,6	163±31,3	>0,05
LDL (mg/dL) Mean.±SD	99,4±29,9	91,8±25,1	>0,05
Homa-IR Mean.±SD	5,6±4,1	1,9±0,8	**<0,01**
ALT(U/L) Mean.±SD	27,9±22	14,5±7	**<0,01**
Trigliserid (mg/dL) Mean.±SD	129,3±59	90,2±45,2	**<0,01**
HDL (mg/dL) Mean.±SD	44,1±11,7	55±13,7	**<0,01**
TSH (uIU/mL) Mean.±SD	3,0±1,5	2,4±0,9	**<0,01**
fT4 (ng/dL) Mean.±SD	1,2±0,1	1,3±0,2	**0,02**
fT3 (pg/mL) Mean.±SD	4,3±0,6	3,9±0,8	**0,02**
Leptin Level (μg/dL) Mean.±SD	20±11,1	5,7±6,9	**<0,01**
Urinary Iodine Level (μg/L) Mean.±SD	114,5±59	109,9±53,4	>0,05
Rate of Iodine deficiency (%)	37	40	>0,05

Table 2. Clinical and laboratory featrueas of obeses with and without SH

Subclinical hypothyroidism	Positive (n=22)	Negative (n=131)	p
Girl/ Boy (%)	54 / 46	66 / 34	>0,05
Age (year) Mean.±SD	13,1±3,1	13,2±2,7	>0,05
Body Weight (SDS) Mean.±SD	4,7±2,5	4,8±2	>0,05
BMI (SDS) Mean.±SD	3,2±0,6	3,2±0,4	>0,05
Body Fat Persent (%) Mean.±SD	40,2±6,9	41,4±6,6	>0,05
Homa_IR Mean.±SD	6,4±4,9	5,5±4	>0,05
Leptin Level (μg/dL) Mean.±SD	16,8±11,0	20,9±11,0	>0,05
Urinary Iodine Level (μg/L) Mean.±SD	136,7±70,8	110,7±56,3	>0,05
Rate of Iodine deficiency (%)	28	39	>0,05



Conclusion

SH was detected in 14.4% of obese children and adolescents, but it was not associated with iodine deficiency or increased leptin levels. However, since SH rate was significantly higher in obese patients with MS than without MS, we suggest that SH may play a role in MS development or vice versa.

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