

Evaluation of Body Composition via Bioelectrical Impedance Analysis in Children with Subclinical Hypothyroidism and Effect of LT4 treatment;

Follow-up Results

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INTRODUCTION

It's well known that overt hypothyroidism leads to weight and body fat content increase but there is limited data in the literature about the effect of subclinical hypothyroidism (SH) on body composition parameters. In our previous study body composition parameters were evaluated in patients with SH and it was concluded that trunk fat mass was increased in SH patients before any alterations in basal metabolism rate occur. In this study we aimed to assess the body composition via bioelectrical impedance analysis (BIA) in SH patients and determine the effect of LT4 treatment on body composition parameters.

MATERIAL-METHOD

Twenty patients diagnosed with subclinical hypothyroidism in-between 5-13 years were involved in the study. All the patients were evaluated with BIA (Tanita MC-780MA) before LT4 treatment and on the 6th month of LT4 treatment. The evaluated body composition parameters were as follows: weight, height, body mass index (BMI), body fat (%), trunk fat mass (TFM) (kg, %), fat-free mass (FFM) (kg, %), trunk fat-free mass (TFFM) (kg), trunk muscle mass (TMM) (kg), and total body fluid (TBF) (kg, %).

Table 1. Anthropometric measurements, thyroid hormone values and BIA results of the patients with subclinical hypothyroidism and control group

	Subclinical Hypothyroidism	Control group	P value
Gender (F/M)	8/7	20/7	0,19
Age (month)	120,6±18,4	131,3±43,7	0,8
Height(cm)	149,4±8,8	146±17,7	0,4
Weight(kg)	49,5±12	40±16,1	0,054
BMI(kg/m2)	21,9±3,7	18±3,8	0,003*
Fat mass (%)	29,2±4	21,7±4,7	0,00*
Fat mass (kg)	15±5,9	8,9±4,4	0,001*
Fat-free mass	34,6±6,9	31,1±12,4	0,2
Total Body water	25,3±5,1	22,8±9,1	0,2
Trunk fat mass (%)	23,1±6,8	15,8±4,9	0,00
Trunk fat mass (kg)	6,3±2,6	3,6±2,04	0,001*
Trunk fat-free mass	20,1±3,4	18,2±6,9	0,2
TSH (µU/mL)	5,03±0,79	2,08±0,86	0,00*
sT4 (ng/dl)	1,18±0,09	1,3±0,15	0,02

RESULTS

Mean age of the patients was 8.17 ± 2.73 years. TFFM (before (*before treatment* 13.13 ± 4.2 kg, *after treatment* $14.09 \pm 4,66$ kg; $p=0.000$) and TMM (*before treatment* 12.30 ± 4.05 kg, *after treatment* 13.20 ± 4.5 kg; $p=0.000$) were increased after LT4 treatment and found statistically significant.

CONCLUSION

According data shows that after LT4 treatment, TFFM and TMM of the patients were increased, which shows the positive metabolic effect of correction of subclinical hypothyroidism. Identification of metabolic alterations in early stages of the thyroid disease and correct intervention is important for prevention of obesity in these cases.

Table 2. Anthropometric measurements, thyroid hormone values and BIA results of the patients with subclinical hypothyroidism and control group

* $p<0.05$ statistically significant

	Before LT4	After LT4	P value
Gender (F/M)	11/9	11/9	
Age (month)	8.17 ± 2.73	8.82 ± 3.16	
Height(cm)	129.35 ± 16.32	132.45 ± 16.68	0.000*
Weight(kg)	26.74 ± 11.68	28.87 ± 12.74	0.000*
BMI(kg/m2)	15.29 ± 2.54	15.65 ± 2.71	0.110
Body fat (%)	19.36 ± 4.78	20.63 ± 3.98	0.078
Fat-free mass (kg)	20.76 ± 8.36	22.65 ± 9.19	0.002*
Fat-free mass(%)	80.60 ± 4.79	78.58 ± 6.22	0.079
Trunk fat mass (kg)	2.41 ± 1.88	2.74 ± 1.80	0.017
Trunk fat mass (%)	14.28 ± 5.23	15.46 ± 4.04	0.144
Trunk fat-free mass (kg)	13.13 ± 4.23	14.09 ± 4.66	0.000*
Trunk muscle mass (kg)	12.30 ± 4.05	13.20 ± 4.50	0.000*
Total body fluid (kg)	15.65 ± 6.03	16.57 ± 6.73	0.001*
Total body fluid (%)	55.99 ± 6.87	58.08 ± 2.92	0.082
sT4 (ng/dl)	1.29 ± 0.14	1.53 ± 0.16	0.000*
TSH (µU/mL)	6.95 ± 2.64	3.43 ± 1.21	0.000*

