



# The effect of subclinical hypothyroidism(SH) and treatment of SH with L-T4 on basal metabolic rate in obese children: A prospective study

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## Introduction:

Subclinical hypothyroidism (SH) is reported up to 20% of obese population and thyroid hormone replacement in these individuals are controversial.

In this study, we aimed to determine the effect of thyroid hormones on basal metabolic rate (BMR) in obesity and, thyroid hormone replacement on BMH and weight in obese patients with SH.

## Method:

- The study was conducted in 31 obese children (15 of them had subclinical hypothyroidism)
- Admitted to our clinic between the February 2015 and February 2016 in a prospective manner
- L-T4 replacement was started in SH group
- As a control group, 12 healthy children with similar age and sex distribution were included
- In the first and final evaluation of patient groups;
  - Anthropometric measurements
  - Serum TSH and f-T4
  - BMR measurements are performed in obese group

Body composition and BMR were also compared with control group

## Results:

- BMI z-scores of children with obesity (n: 16), SH obesity (n:15) and control groups were  $2.32 \pm 0.35$ ;  $2.31 \pm 0.32$ ;  $0.80 \pm 0.59$ , respectively
- BMI z-scores were similar in two obese groups and which were higher than the control group
- BMR and %BMR were similar in all 3 groups
- TSH levels of obese and obese SH groups were significantly different ( $2.8 \pm 1.13$  vs.  $6.60 \pm 1.44$ ;  $p < 0.001$ )
- After 6 weeks of L-thyroxin treatment TSH levels were significantly decreased ( $6.60 \pm 1.44$  vs.  $4.5 \pm 0.9$ ;  $p < 0.0001$ )
- But, f-T4 levels remained unchanged ( $0.83 \pm 0.1$  vs.  $0.83 \pm 0.14$ ;  $p > 0.05$ ) in obese SH group
- No significant change has been detected in BMR, %BMR, BMI z-score and percentiles after L-T4 treatment ( $p > 0.05$ )

## Conclusions

- ✓ BMRs were similar in obese children to healthy non-obese children
- ✓ We found no effect of SH on BMR and degree of obesity
- ✓ Normalization of TSH with L-T4 replacement also had no effect on BMR and weight in obese children with SH

