

LEVOTHYROXINE TREATMENT OF SUBCLINICAL (SH) AND OVERT (OH) HYPOTHYROIDISM IN CHILDREN WITH AUTOIMMUNE HASHIMOTO THYROIDITIS (AHT): A RETROSPECTIVE STUDY IN REGARD WITH TSH AND FREE T4 (FT4) AT DIAGNOSIS

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Objectives

Assess the dose of levothyroxine in relation to TSH and FT4 at diagnosis of AHT in children with SH and OH.

Methods

Eighty eight children (69 girls) with AHT were divided in regard with TSH and FT4 levels at diagnosis [SH-FT4 >0.9 ng/dl: **Group 1:** TSH: 4.5-7 mU/l, **Group 2:** TSH: 7-10 mU/l, **Group 3:** TSH: >10 mU/l and **OH:** **Group 4:** TSH>10 mU/l and FT4 ≤0.9ng/dl]. Mean L-T4 dose was reported in µg/Kg/day at diagnosis and at 2.4 years of follow up. TSH targeted levels under treatment were ≤4 mU/l.

Results

- Mean age at diagnosis was 9.7 yrs (SD, 2.6). Main characteristics are shown in table 1.
- At diagnosis, FT4 levels were significantly lower only in OH with regard to SH groups.
- Similarly, L-T4 dose in OH was significantly higher as compared to SH groups.
- At 2.4 yrs (SD, 1.2) of treatment all patients were euthyroid and TSH and FT4 levels did not differ significantly between groups.
- L-T4 dose was significantly higher in OH as opposed to group 1 and group 2 but not group 3.

	Group 1 (n=26)	Group2 (n=26)	Group 3 (n=21)	Group 4 (n=15)	*p
AT DIAGNOSIS					
Age (yrs)	10.2 (2.2)	10.4 (2.6)	9.2 (2.8)	8.6 (2.9)	
Height z-score	0.68 (1.1)	0.47 (1.2)	0.25 (0.9)	0.48 (0.8)	
BMI z-score	0.83 (0.8)	0.78 (0.9)	0.88 (0.9)	1.04 (1.1)	
TSH (mU/l)	5.6 (0.6)	8.1 (0.9)	16.5 (12.9)	57.7 (46.4)	*
FT4 (ng/dl)	1.23 (0.2)	1.18 (0.1)	1.16 (0.1)	0.8 (0.1)	*
L-T4 (µg/Kg/day)	1.1 (0.35)	1.03 (0.27)	1.38 (0.37)	1.91 (0.9)	*
AT FOLLOW UP (2.4 yrs)					
Age (yrs)	12.3 (1.9)	13.1 (2.5)	11.6 (3.2)	10.7(2.8)	
Height z-score	0.69 (1.0)	0.46 (1.1)	0.43 (0.8)	0.76 (0.9)	
BMI z-score	0.65 (0.8)	0.65 (0.8)	0.92 (0.9)	0.89 (0.9)	
TSH (mU/l)	2.5 (1.3)	2.8 (1.3)	2.2 (1.2)	2.1 (0.9)	
FT4 (ng/dl)	1.4 (0.2)	1.3 (0.2)	1.3 (0.2)	1.2 (0.2)	
L-T4 (µg/Kg/day)	1.2 (0.3)	1.2 (0.3)	1.5 (0.4)	1.9 (1.2)	*

Table 1. Data are shown as means (SD). *One-Way Analysis of variance (ANOVA), p<0.05.

Conclusions

- At diagnosis, L-T4 needs are significantly lower in SH patients as opposed to OH patients.
- At 2.4 years of therapy, children with OH receive significantly higher LT-4 doses than those with SH and TSH < 10 mU/l but similar with those of SH and TSH > 10 mU/l.

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1. Dorr et al., *Horm Res Paediatr*, 2015; 84: 266-274
2. Pearce et al., *Eur Thyroid J*, 2013; 2:215-228