

LEVOTHYROXINE EFFECT ON THYROID VOLUME IN CHILDREN WITH AUTOIMMUNE HASHIMOTO THYROIDITIS (AHT) PRESENTING SUBCLINICAL (SH) OR OVERT (OH) HYPOTHYROIDISM

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Objectives

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

Methods

Two hundred one children (155 girls) with AHT were divided according to TSH and FT4 levels at diagnosis of hypothyroidism

- SH-FT4 >1.0 ng/dl: Group 1: TSH: 5-7.5 mU/l, Group 2: TSH: >7.5 mU/l,
- OH: Group 3: TSH>7.5 mU/l and FT4 ≤1.0ng/dl.
- Mean L-T4 dose was reported in µg/Kg/day at diagnosis and at 2.9 years of follow up and TSH targeted levels under treatment were 1-4 mU/l.
- Thyroid volume was calculated by the modified formula of the rotation ellipsoid: Vol (mL)= 0.479 (deep x wide x length). TV was defined as the sum of the volumes of both lobes (isthmus not included).

Results

Mean age at diagnosis was 9.6 yrs (SD, 2.6). Main characteristics are shown in table 1.

- At diagnosis, TSH, FT4 levels, L-T4 dose and thyroid volume were significantly different (p<0.05) between SH (groups 1 and 2) as compared to OH (group 3).
- At follow-up all patients were euthyroid and TSH and FT4 levels did not differ significantly between groups. L-T4 dose was significantly higher in OH as compared to group 1 but not group 2. Thyroid volume did not differ significantly among groups.

	Group 1 (n=70)	Group2 (n=72)	Group 3 (n=59)	*p
AT DIAGNOSIS				
Age (yrs)	10.4 (2.6)	8.9 (2.6)	9.6 (2.4)	
Height z-score	0.55 (0.9)	0.52 (1.0)	0.43 (0.9)	
BMI z-score	0.87 (0.9)	0.93 (0.9)	0.92 (1.1)	
TSH (mU/l)	6.1 (0.7)	10.9 (5.6)	47.9 (74.2)	*
FT4 (ng/dl)	1.2 (0.2)	1.3 (0.16)	0.85 (0.1)	*
L-T4 (µg/Kg/day)	1.1 (0.39)	1.3 (0.51)	1.5 (0.6)	*
Thyroid volume (ml)	8.0 (4.3)	6.3 (3.7)	10.1 (6.3)	*
AT FOLLOW UP (yrs)				
Age (yrs)	13.2 (2.4)	12.1 (2.7)	12.6 (2.4)	
Height z-score	0.56 (1.0)	0.59 (0.9)	0.43 (0.8)	
BMI z-score	0.82(0.8)	0.76 (0.9)	0.92 (0.9)	
TSH (mU/l)	2.2 (1.2)	2.6 (1.2)	2.2 (1.1)	
FT4 (ng/dl)	1.4 (0.2)	1.4 (0.4)	1.3 (0.2)	
L-T4 (µg/Kg/day)	1.1 (0.3)	1.4 (0.4)	1.6 (0.7)	*
Thyroid volume (ml)	7.7 (4.1)	6.7 (3.9)	8.4 (3.5)	

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

Conclusions

- At diagnosis, L-T4 needs and thyroid volume are significantly lower in SH patients as opposed to OH patients.
- At 2.9 yrs, children with OH receive significantly higher LT-4 doses than those with SH and TSH < 7.5 mU/l but similar with those of SH and TSH > 7.5 mU/l. All patients present similar thyroid volumes.

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

The authors declare that they have no conflict of interest.