

# Five-year prospective evaluation of thyroid function test evolution in children with Hashimoto's thyroiditis presenting with either euthyroidism or subclinical hypothyroidism

P2-P939

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## OBJECTIVES

**Background:** It has been only sporadically investigated to now whether the course of thyroid function in Hashimoto's thyroiditis (HT) may differ in the children who present with either euthyroidism or subclinical hypothyroidism (SH).

**Aim:** To establish, by means of a 5-year prospective evaluation of 234 children with HT and no prognostic risk factors, whether thyroid status evolution may be conditioned by the biochemical pattern at HT diagnosis.

## METHODS

From the time of recruitment all of them were followed-up as outpatients every 12 months for a pre-established period of 5 years and only those who completed the overall follow-up period were taken into consideration for this study. At each examination TSH, FT4, thyroid peroxidase and thyroglobulin (TPOAb and TGAb) serum levels were measured.

**Table 1**  
Median ages (and ranges), prevalences (%) of pubertal patients, median TSH (and range), mean FT4 ( $\pm$ SD), median thyroid peroxidase and thyroglobulin autoantibody (TPOAbs and TGAb) serum levels (and ranges), at diagnosis of Hashimoto's thyroiditis, in the entire study population and in the two groups of children presenting with either euthyroidism (Group A) or subclinical hypothyroidism (Group B).

	Age (years)	Pubertal patients	TSH (mIU/ml)	FT4 (pmol/l)	TPOAbs (mIU/l)	TGAb (mIU/l)
Entire population (n=234)	10.5 (2.5-17.4)	53.0	3.8 (0.5-19.3)	15.0 $\pm$ 3.5	340 (40-29950)	200 (35-8348)
Group A (n=170)	10.5 (2.5-17.4)	55.3	2.7 (0.5-4.0)	15.4 $\pm$ 3.5	362 (40-29950)	204 (37-8348)
Group B (n=64)	10.1 (3.9-15.9)	46.9	5.9 (5.0-19.3)	14.1 $\pm$ 3.2	283 (40-6375)	200 (35-3000)
p*	0.40	0.25	0.0001	0.012	0.36	0.28

\*between groups A and B

**Table 2**  
Median ages (and ranges), prevalences (%) of pubertal patients, median TSH (and range), mean FT4 ( $\pm$ SD), median thyroid peroxidase and thyroglobulin autoantibody (TPOAbs and TGAb) serum levels (and ranges) at the end of 5-year follow-up, in the entire study population and in the two groups of patients presenting with either euthyroidism (Group A) or subclinical hypothyroidism (Group B).

	Age (years)	Pubertal patients	TSH (mIU/ml)	p*	FT4 (pmol/l)	p*	TPOAbs (mIU/l)	p*	TGAb (mIU/l)	p*
Entire population (n=234)	15.3 (7.6-22.4)	92.7	4.0 (0.07-99)	0.001	14.3 $\pm$ 3.5	0.020	251 (6-8945)	0.036	119 (5-6443)	0.003
Group A (n=170)	15.5 (7.6-22.4)	94.7	3.4 (0.5-99)	0.001	15.1 $\pm$ 3.3	0.190	286 (6-8945)	0.102	120 (5-6443)	0.077
Group B (n=64)	15.0 (8.9-19.5)	87.7	6.2 (0.07-14.3)	0.192	13.3 $\pm$ 3.6	0.186	194.5 (19-285.4)	0.048	110.5 (20-700)	0.0001
p*	0.260	0.058	0.0001		0.0001		0.089		0.080	

\*vs the corresponding level measured at the start of follow-up

\*between groups A and B

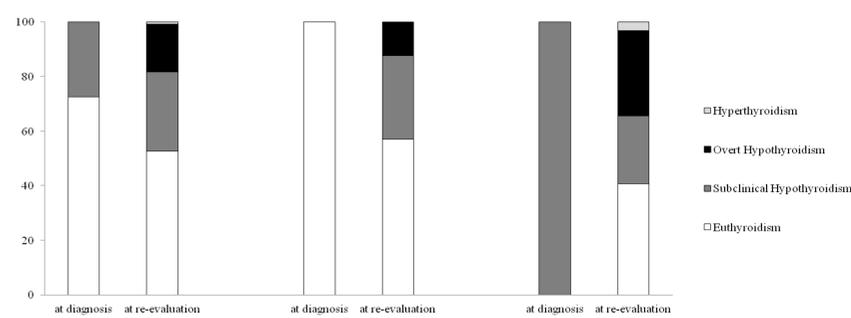
**Table 3**  
Prevalences (%) of the different biochemical patterns of thyroid function detected, at the end of a 5-year follow-up, in the entire population and in the two groups of children with Hashimoto's thyroiditis presenting with either euthyroidism (Group A) or subclinical hypothyroidism (Group B).

	Euthyroidism	Subclinical hypothyroidism	Overt hypothyroidism	Hyperthyroidism	Overall dysfunctions
Entire population (n=234)	52.6	29.1	17.5	0.8	47.4
Group A (n=170)	57.1	30.6	12.3	0	42.9
Group B (n=64)	40.6	25.0	31.2	3.2	59.4
P*	0.025	0.400	0.0007	0.020	0.025

\*between groups A and B

## RESULTS

In the entire series TSH values significantly increased during follow-up, whilst FT4 values decreased and the proportion of children with a thyroid dysfunction increased from 27.3 to 47.4% (p=0.0001). An increasing proportion of cases with a severe thyroid dysfunction picture was recorded especially among the 64 patients presenting with SH (group B) but also among the 170 children presenting with euthyroidism (group A). At the end of follow-up the prevalence of children with overt hypothyroidism was 12.3% in group A vs 31.2% in group B (p=0.0007). In the overall population, however, the majority of patients (52.6%) exhibited, at the end of follow-up, a biochemical euthyroidism.



## CONCLUSIONS

- children with HT may be per se incline to show, during the first 5 years of disease, a spontaneous deterioration of thyroid status;
- such a trend may be observed even in the patients who initially present with a mild biochemical picture (either SH or euthyroidism);
- nevertheless, a 57.1% of initially euthyroid children may remain euthyroid and a 40.6% of patients with initial SH can also spontaneously normalize thyroid function within 5 years after HT diagnosis;
- the patients presenting with SH are more exposed to the risk of developing over time a severe thyroid dysfunction picture.

## References

Aversa T, Corrias A, Salerno M, Tessaris D, Di Mase R, Valenzise M, Corica D, De Luca F, Wasniewska M.  
Five-year prospective evaluation of thyroid function test evolution in children with Hashimoto's thyroiditis presenting with either euthyroidism or subclinical hypothyroidism. *Thyroid*. 2016 Aug 19. [Epub ahead of print] PubMed PMID: 27541075.

