Subclinical hypothyroidism in children and adolescents – a 5-year single-center follow-up study

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Context

Screening for thyroid disorders has become more common in recent years, thus leading to subclinical hypothyroidism (SH) being diagnosed more frequently. The question arises whether SH causes symptoms or whether their presence is a coincidence? What about the natural history of thyroid function and indications for L-thyroxine therapy in SH.?

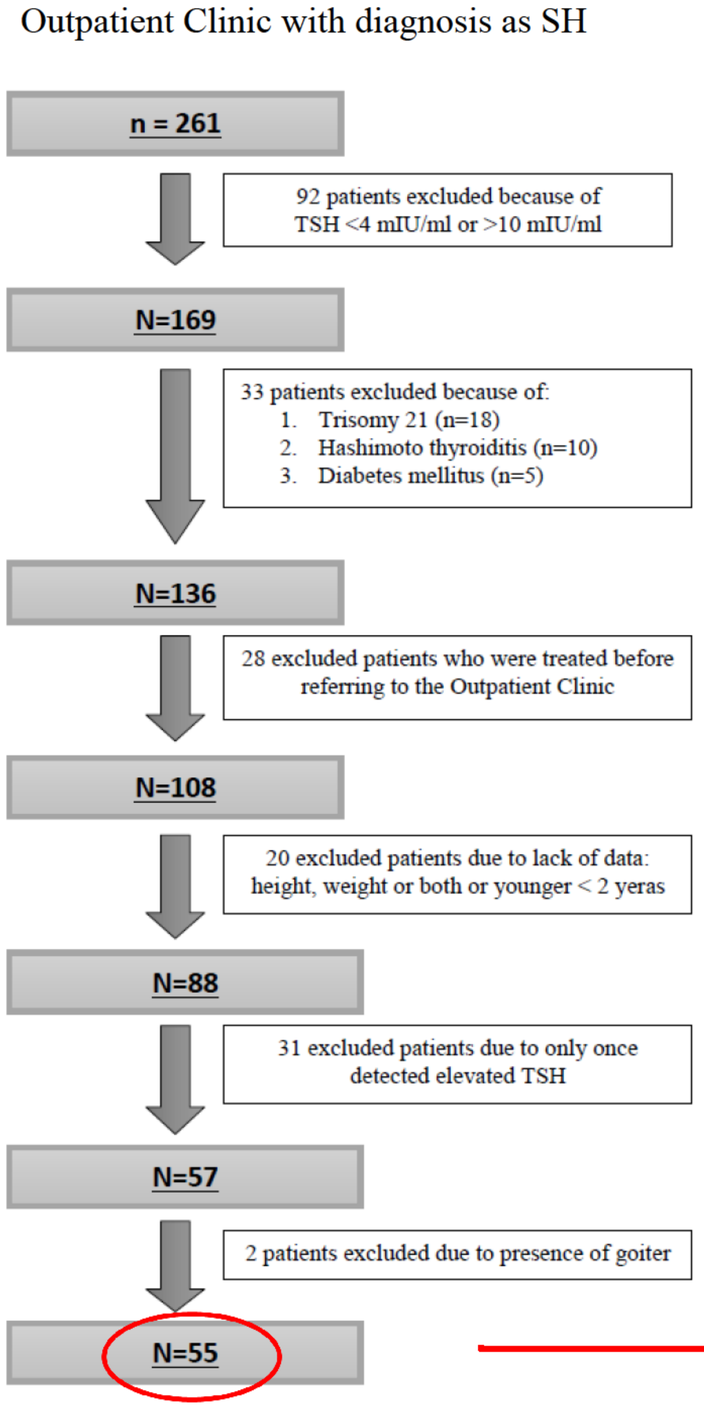
Objectives

The aim of the study was to analyze the dynamics of thyroid dysfunction in children initially referred as patients with SH. Moreover, we try to establish the reasons of decision for L-thyroxine therapy in younger patients with subclinical hypothyroidism.

Patients and Methods

The study methodology was based on the retrospective review of charts of 261 patients who were referred to the endocrinology outpatients Clinic with suspicion of subclinical hypothyroidism between 2009 and 2012 and followed-up till 2015.

Exclusion criteria of patients: patients referred to Outpatient Clinic with diagnosis as SH



Conclusions

- **Our data confirmed that only a small percentage of children with SH can proceed to overt hypothyroidism.**
- **Only positive family history differed patients who underwent therapy with levothyroxine from those who did not receive the treatment**
- **Further prospective investigation is urgently needed.**

Results

Comparison of patients with only once detected elevated TSH to patients who were observed for long-time (baseline data)

	Pts observed for long-time (n=55)	Pts with only once detected elevated TSH (n=31)	p value
Age, mean	9.45 ± 4.25	8.7 ± 4.24	0.43
BMI Z-score, mean	0.30 ± 1.64	0.84 ± 1.48	0.09
hSDS, mean	(-0.35) ±1.79	0.15 ± 1.37	0.19
TSH, mean	5.67 ± 1.2	5.1 ± 1.16	**0.02**
Positive family history (%)	4 (7.3)	5 (16.1)	0.32
Presence of symptoms (%)	44 (80.0)	12 (38.7)	0.94

Characterization of study group according to gender (baseline data)

	Girls (n = 31)	Boys (n = 24)	p value
Age, mean	10.02 ± 4.32	8.72 ± 4.15	0.33
BMI Z-score, mean	0.36 ± 1.76	0.23 ± 1.51	0.78
hSDS, mean	(-0.29) ± 1.84	(-0.43) ± 1.75	0.78
TSH, mean	5.79 ± 1.34	5.51 ± 1.0	0.39
FU, mean (days)	473.52 ± 437.54	401.50 ± 368.95	0.58
Positive family history (%)	2 (6.25)	2 (8.0)	0.79
Presence of symptoms (%)	27 (84.4)	17 (68.0)	0.16

Baseline comparison of patients who were treated with LT-4 to patients without treatment

	Treated with LT-4 (n = 33)	Untreated with LT-4 (n = 22)	p value
Age, mean	9.75 ± 4.0	9.0 ± 4.67	0.52
BMI Z-score, mean	0.12 ± 1.57	0.58 ± 1.75	0.16
hSDS, mean	(-0.32) ± 1.89	(-0.38) ± 1.66	0.80
TSH, mean	5.9 ± 1.36	5.33 ± 0.85	0.09
FU, mean (days)	619.91 ± 392.49	175. 36 ± 258.77	**<0.0001**
Positive family history (%)	4 (11.8)	0 (0)	**<0.01**
Presence of symptoms (%)	25 (73.5)	19 (86.4)	0.12

The mean dose used in 33 patients was **0.82 ± 0.48 µg/kg/day**, median dose: 0.71 µg/kg/day, in the range of 0.25 µg/kg/day to 2.41 µg/kg/day

- **15 (68.2%)** children who did no undergo treatment normalized their TSH serum levels (< 4mIU/ml) during their follow-up
- **In 7 (31.8%)** patients the TSH concentration remained above the reference range but less than <10 mIU/ml
- **4 (7.3%)** patients (3 girls and 1 boy) had baseline TSH level above the 7.5 mIU/l, whilst only 1 of them (girl) showed a progression to overt hypothyroidism

Clinical signs suggesting subclinical hypothyroidism

	Untreated (n=22)	Treated with LT-4 (n=33)	p value
Obesity, (%)	6 (27.3)	2 (6.1)	0.07
Overweight, (%)	6 (27.3)	10 (30.3)	0.92
Weight deficiency, (%)	3 (13.6)	4 (12.1)	0.81
Significant weight deficiency, (%)	3 (13.6)	3 (9.1)	0.93
Short stature, (%)	4 (18.2)	6 (18.2)	0.72
Hair loss, (%)	1 (4.5)	0 (0.0)	0.84
Constipation, (%)	1 (4.5)	0 (0.0)	0.84
Impaired concentration, (%)	0 (0.0)	2 (6.1)	0.66
Cold intolerance, (%)	0 (0.0)	3 (9.1)	0.39
Menstrual disorder, (%)	1 (4.5)	1 (3.0)	0.66
Chronic fatigue, (%)	0 (0.0)	1 (3.0)	0.84
Dry skin, (%)	1 (4.5)	5 (15.2)	0.43

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