

Factors useful to distinguish between children with permanent congenital hypothyroidism and transient or permanent hyperthyrotropinemia

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Background

Screening for congenital hypothyroidism (CH) with the possibility of an early treatment has transformed the outlook for children with CH. Despite the unquestioned public health success of newborn screening programs, the management of CH is still controversial. Most patients with positive screening have permanent hypothyroidism but some of them may have transient hyperthyrotropinemia, so it is important to identify these patients in order to avoid lifelong unnecessary treatment.

Objective and hypotheses

To identify factors useful to distinguish between children with permanent congenital hypothyroidism and transient (TH) or permanent hyperthyrotropinemia (PH).

Method

We enrolled 54 children with positive screening test for CH. All these patients have been treated with levothyroxine (T) at a dose of 10-12 mcg/kg/day up to three years when treatment has been discontinued and the diagnosis was rechecked. Comparison between different parameters in the three groups was performed by one-way analysis of variance (ANOVA) and chi-square.

Results

	TH (n= 23)	PH (n= 10)	CH (n= 21)	p
Gestational age (weeks)	36.4	37.5	38.1	0.117
Birth weight (g)	2590	2700	2900	0.270
TSH at diagnosis (mIU/ml)	81.5	105.2	82.4	0.842
FT4 at diagnosis	9.5	9.0	12.7	0.720
T at diagnosis (mcg/day)	31.19	32.0	29.81	0.899
T adjustment	0/23 (0%)	0/10 (0%)	12/21 (57%)	0.0001
T at 1 years (mcg/kg/day)	2.31	2.93	3.02	0.154
T at 3 years (mcg/kg/day)	1.33	1.70	2.67	0.0001

Conclusions

Our data demonstrate that none of the considered parameters was able to predict differential diagnosis among CH and either TH or PH before the age of 3 yrs, with the only exception of T dose adjustments that were necessary only in CH patients; as a consequence of T adjustment, T dose at the age of therapy withdrawal was significantly higher in CH patients than in the other groups. When TH or PH is suspected early cessation of therapy should be considered in order to reduce medical expenses and parental anxiety.