

# THYROID FUNCTION IN CHILDREN AFFECTED BY CONGENITAL HYPOTHYROIDISM (CH) WITH EUTOPIC THYROID GLAND AFTER DISCONTINUATION OF TREATMENT WITH LEVOTHYROXINE

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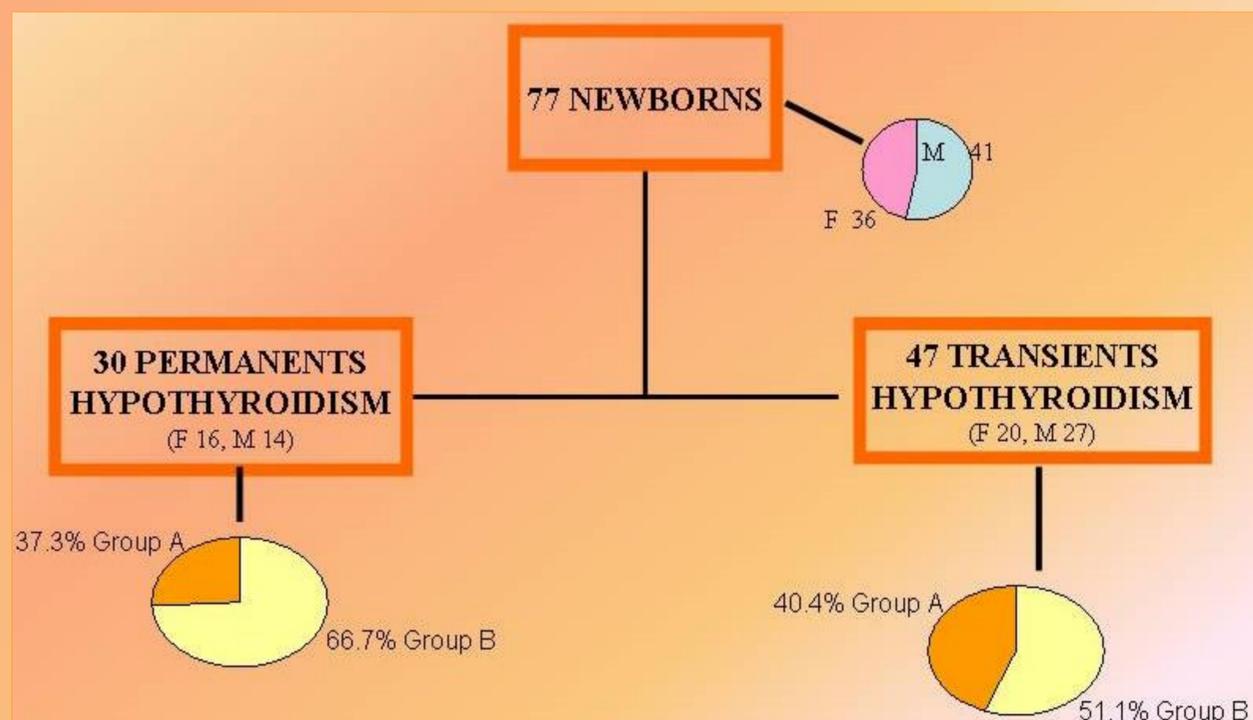
**Objective and hypotheses:** We analysed the prevalence of transient hypothyroidism in a cohort of children affected by CH with eutopic thyroid gland after Levothyroxine discontinuation

**Method:** 77 newborns (36 females, 41 males) affected by CH with eutopic thyroid gland from 1999 to 2011 were enrolled. The confirmation diagnosis of CH after neonatal screening was made within the first fifteen days of life by assessing TSH value (mean  $74.4 \pm 82.2$   $\mu\text{U/ml}$  n.v. 0.5-4.2 ) and fT4 value (mean  $8.9 \pm 3.6$   $\text{pg/mL}$ , n.v. 9-17). Thyroid ultrasound was performed in all newborn and treatment with Levothyroxine at a daily dose of 5-10  $\text{mcg/kg/day}$  (median dose 8,5  $\text{mcg/kg/day}$ ) was started.

All children were re-evaluated at a mean age of  $3.5 \pm 1.0$  years after treatment discontinuation for 4 weeks. They were divided in two groups according to TSH value at neonatal screening: **group (A)** TSH 7-10  $\mu\text{U/ml}$  and **group (B)** TSH > 10.1  $\mu\text{U/ml}$  (TSH cut-off value 7 $\mu\text{U/ml}$ ).

## Results:

Forty-seven children (61.0%) had transient hypothyroidism and 30 (39.0%) had permanent hypothyroidism; the latter had a mean TSH value at neonatal screening of  $23.08 \pm 25.8$   $\mu\text{U/ml}$  (37.3% were in group A and 66.7% in group B) compared to the mean TSH value at diagnosis of  $76.7 \pm 95.1$   $\mu\text{U/ml}$ . Children with transient hypothyroidism had a TSH value at neonatal screening of  $16.6 \pm 16.1$   $\mu\text{U/ml}$  (40.4% were in group A and 51.1% in group B) compared to the mean TSH value at diagnosis of  $75.1 \pm 87.7$   $\mu\text{U/ml}$ .



No significant relationships were found between the two groups of children for their outcomes indicated as transient vs permanent hypothyroidism, mean TSH values at neonatal screening ( $P=0,79$ ), at diagnosis ( $P=0,70$ ), and dosage of Levothyroxine at diagnosis ( $P=0,12$ ). Moreover, no correlation was found between mean TSH values at neonatal screening and after therapy discontinuation ( $r_s=0.15$ ). Conversely, a significant relationship between the number of Levothyroxine therapy variations and the final outcome was found in children with permanent hypothyroidism ( $2.1 \pm 2.0$ ) vs children with transient hypothyroidism ( $0.9 \pm 1.1$ ;  $p=0,0097$ ).

**Conclusion:** 39.0% of children with Congenital Hypothyroidism and eutopic thyroid gland presented true hypothyroidism after treatment discontinuation. Number of Levothyroxine therapy variations was the only significant factor as determinant of permanent hypothyroidism.