

Progressive thyroid dysfunction in infants with Down Syndrome; Trisomy 21 (DS): Effect on Linear Growth

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Introduction

Down syndrome have an increased risk of developing several medical conditions. Hypothyroidism is the most frequent thyroid abnormality in DS. It can be either congenital, or acquired at any age after birth. It can be clinical or subclinical disorder.

The effect of subclinical hypothyroidism on linear growth in these patients is debatable. More evidence is required regarding the progressive nature of thyroid dysfunction with age as well as on its possible effect, if any, on linear growth.

Methods

We measured thyroid function (Free T4 and TSH) and Anti TPO level in 37 infants with DS at birth, during their first year and after 2.5 years of age.

Their linear growth (Length (L), weight (Wt), L_{SDS}, BMI and BMISDS) were measured and analyzed in relation to their thyroid function.

We defined overt versus subclinical hypothyroidism in these children as following.

Definition

Overt hypothyroidism	FT4 <9 pmol/L TSH >10 µIU/ml
Subclinical hypothyroidism	Normal FT4 TSH > 15 µIU/ml at birth TSH > 10 µIU/ml infancy & childhood

All infants with thyroid dysfunction were treated with L thyroxine to keep their FT4 in the normal range.



Results

Table 1: Progressive thyroid dysfunction in infants with DS during infancy and early childhood.

Age	Hypothyroid	Subclinical Hypothyroid	Normal
Birth	2.7%	2.7%	94.6%
0.45 y	8%	24.3%	67.5%
2.7 y	10.8%	29.7%	59.5%

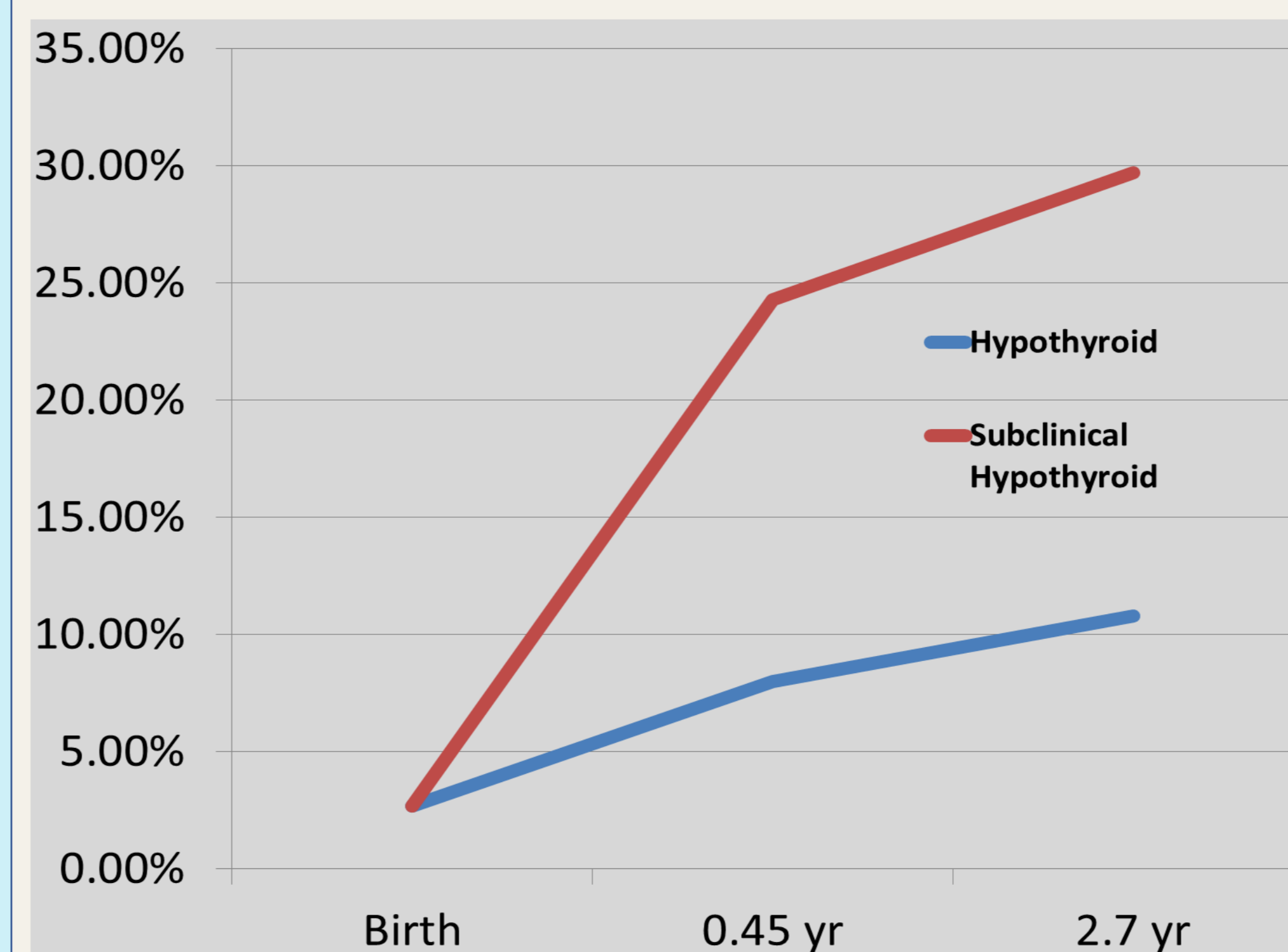
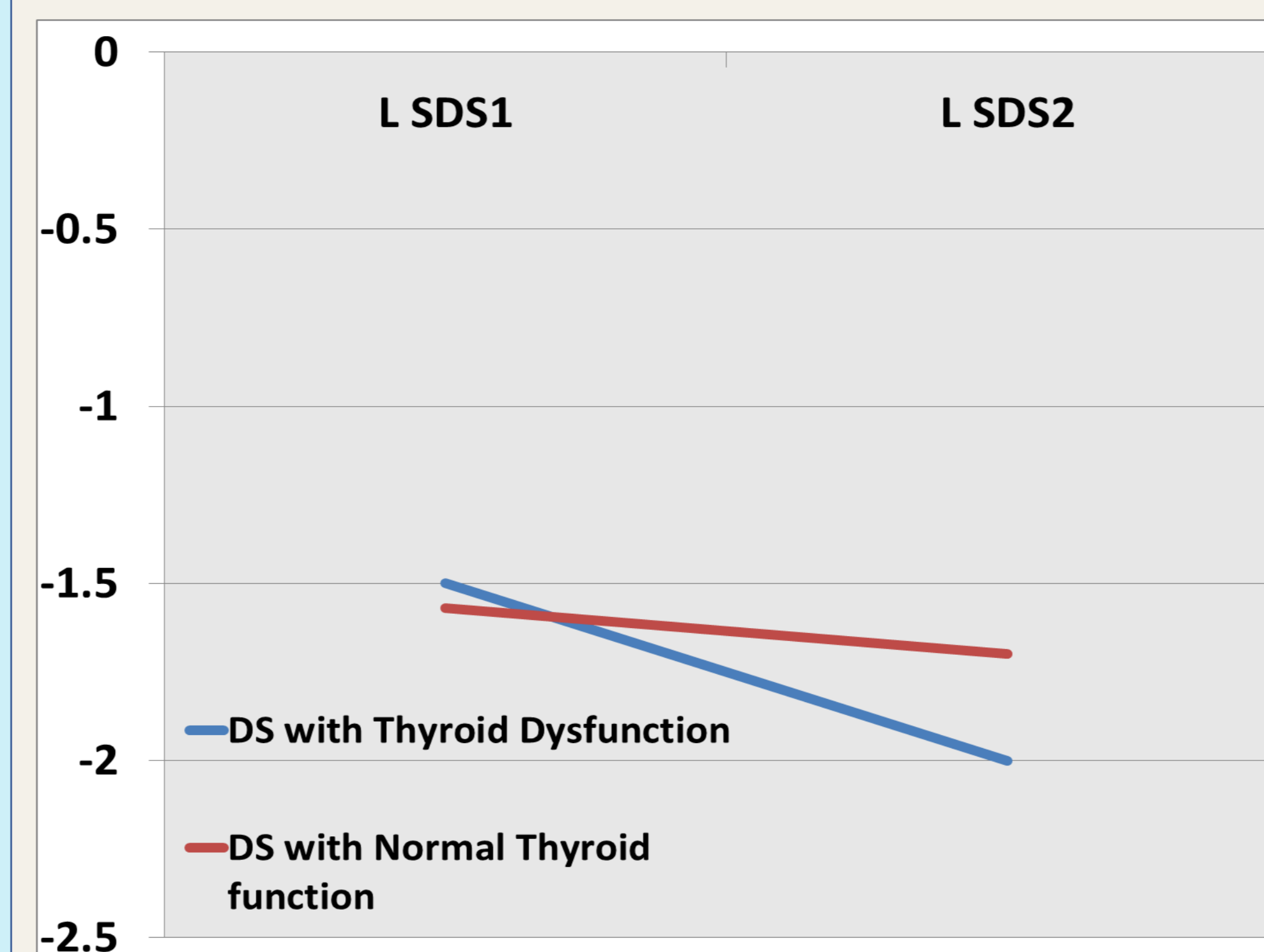


Table 2: Linear growth in DS with thyroid dysfunction versus DS with normal thyroid function

	DS with Thyroid Dysfunction	DS with Normal Thyroid function
Number	12/37	25/37
L SDS1	-1.5	-1.57
BMI1	14.4	14
BMISDS1	-1.1	-1.45
L SDS2	-2	-1.7
BMI2	16.4	16
BMISDS2	0.4 *	0.2 *



1:at 0.45 years, 2:at 2.7 years, *p< 0.05 same group after follow up, # p< 0.05 between groups

Discussion

- The incidence of thyroid dysfunction in our DS infants at birth was 1:37 (2.7%), higher than the reported in other studies and compared with an incidence of congenital hypothyroidism in our country (1:2150) among our normal newborns.
- There was a progressive increase in thyroid dysfunction in DS children especially during the first year of life.
- Females had more thyroid dysfunction versus males (73% versus 27% respectively).
- At 2.7 years ~ 40% of them had thyroid dysfunction, 8% (3/37) had positive Anti-TPO; and two of them had thyroid dysfunction.
- No statistical significant effect on linear growth in the treated group vs normal DS children with no thyroid dysfunction.

Conclusion

Thyroid dysfunction is common in infants with DS especially developing during the first year of life. Early management of thyroid dysfunction is associated with normal linear growth compared to those with normal thyroid function.



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No conflict of interest among Authors

