

Welcome to Journal Club

Presented by

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Influence of severity of congenital
hypothyroidism and adequacy of treatment on
school achievement in young adolescents: a
population-based cohort study.

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Introduction

The benefit of early treatment in mental development in patients with congenital hypothyroidism (CH) has been well recognised. Neonatal screening for CH enable us to detect to treat those cases early but long term treatment outcome has not been completely evaluated.

Objectives

To determine the risk factors of poor school performance in early adolescence and to investigate which factors affect their school achievement in early treated subjects of CH.

Subjects & Methods

All children , total 1304 after follow up 682, treated early for CH diagnosed from neonatal screening program born in France during 1979-1985 were selected for the study. Initial clinical data were taken from Basic Birth Registration form which were completed by a follow up survey in 1994 and in 1998 by means of questionnaire sent to all paediatrician.

Subjects & Methods (contd)

School performance during childhood, assessed according to age at entry into the 1st grade of secondary school, was evaluated as normal (usually 11 years) vs late entry (more than 12 years). The national register of children with CH enabled a comparison to be made with data from the national population for the same school years.

Results

First grade of secondary school entry was delayed in CH child in comparison to same sex and socio professional category of the national normal child.

Risk factors for late entry into first grade of secondary school

<u>A. Disease severity at diagnosis</u>	<u>Risk (odd ratio & 95% CI)</u>
a) Aetiology	
-Athyrosis	Yes
-Ectopic & normal sited	No
b) T ₄ value	
- >53nmol/L	No
- <53nmol/L	Yes
c) Epiphyseal centre at knee	
- Both or 1 present	No
- Both absent	Yes
d) Clinical signs of CH	
- Absent	No
- Present	Yes

Risk factors for late entry into first grade of secondary school

<u>B. Treatment variable</u>	<u>Risk (odd ratio & 95% CI)</u>
a) At the beginning of treatment	
-Age < 40 days	No
-L-thyroxin ≥ 7 microgm	No
<7microgm	Yes
b) After 15 days of treatment	
- T ₄ value >184nmol/L	No
- T ₄ value <184nmol/L	Yes
- TSH value ≤ 20 mU/L	No
- TSH value > 20mU/L	Yes
c) Number of TSH ≥ 15 mU/L, 6 months onward follow up	
- <4 times	No
- >4 times	Yes

Discussion

- Among patients with CH, school performance was affected by the severity of CH at diagnosis and, more importantly, by adequacy of treatment during the whole follow-up period.
- The associations found in this study between L-thyroxine dosage at onset of treatment and subsequent school achievement in adolescents are thus in agreement with previous findings in childhood and justify the higher initial L-thyroxine dosage recommended nowadays.

Conclusion

- Careful follow-up of the adequacy of treatment is required throughout childhood, to reduce the risk of school delay.

Message

Initial adequate dose of L- Thyroxine and its maintenance, which optimize the T₄ and TSH level, are very much important for long term outcome.

HRT for CH

L- Thyroxine: 10-15microgm/kg/day single morning dose until T_4 and TSH level become normal (1-1½ month required to become normal T_4 and TSH level). Then maintenance therapy 4microgm/ kg/day single morning dose for life long.

During infancy, if there is no features of hyperthyroidism, initial dose 10-15microgm/kg/day single morning dose should be continued, then after infancy 4microgm/ kg/day single morning dose for life long.

Follow Up

- At 1 month: T_4 and TSH level Should be done, if remain abnormal then again after 1 month.
- 3 monthly upto 1 year: T_4 and TSH level, growth monitoring, bone age at 6 month.
- Yearly upto 3 years: T_4 and TSH level, growth monitoring bone age.

Bone age should not be 2 years ahead or behind.

Thank You