

# The influence of etiology and treatment factors on intellectual outcome in congenital hypothyroidism

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## OBJECTIVES

Congenital hypothyroidism (CH) is one of the most common diseases causing mental retardation.<sup>1</sup> The aim of the present study was to evaluate factors that affect the intellectual outcomes of children diagnosed with CH.

## METHODS

We retrospectively reviewed the clinical records of 43 children diagnosed with CH. Children aged between 5 and 7 years were examined using the Korean Wechsler Intelligence Scale for Children or the Korean Wechsler Preschool and Primary Scale of Intelligence. We analyzed the factors that influence the intellectual outcomes of children with CH.

**Table 1. Comparison of intellectual outcome in congenital hypothyroidism patients stratified for starting dose of levothyroxine**

	L-T4 low dose group (6-9.9 µg/kg/d)	L-T4 high dose group (10-16 µg/kg/d)	p value
Age at treatment (day)	31.38±13.31	23.41±6.71	0.002
Weight at treatment (kg)	4.53±1.13	4.01±0.62	0.005
Pretreatment fT4 (ng/dl)	0.98±0.39	0.46±0.33	0.021
Pretreatment TSH (µIU/mL)	28.27±17.44	88.69±98.12	0.001
Age at IQ test (years)	5.85±0.62	5.94±0.68	0.843
Full-scale IQ	106.14±11.10	100.27±11.72	0.406
Verbal IQ	100.23±14.15	97.86±9.73	0.158
Performance IQ	106.57±17.87	103.13±14.00	0.787

**Table 2. Pearson correlation analysis expressing the effects of clinical variables on intellectual outcome**

	Full-scale IQ		Verbal IQ		Performance IQ	
	r	p value	r	p value	r	p value
Pretreatment fT4	0.287	0.045	0.231	0.087	0.175	0.153
Pretreatment TSH	-0.200	0.121	-0.110	0.261	-0.098	0.285
Age at treatment	-0.024	0.446	-0.198	0.123	0.173	0.157
Initial dosage(µg/kg/d)	-0.199	0.123	-0.045	0.398	-0.153	0.187

## RESULTS

Of the 43 children included in this study, 22 (51.2%) were female and 21 (48.8%) were male; female: male ratio of 1.047:1. Twenty-one subjects were treated with a low dose (6.0-9.9 µg/kg/day) and 22 a high dose of levothyroxine (10.0-16.0 µg/kg/day). There was no significant difference in the mean FSIQ, VIQ and PIQ scores between the two groups. On Pearson's correlation test, initial free T4 level was associated only with intelligence quotient score.

## CONCLUSIONS

The results showed that initial fT4 levels were significantly correlated with IQ scores, but initial starting L-T4 dose did not affect the intellectual outcomes in preschool children with CH.

## REFERENCE

1. Rovet JF. The role of thyroid hormones for brain development and cognitive function. *Endocr Dev* 2014; 26: 26-43

In relation to this presentation, I declare that there are no conflicts of interest.

