

LONG-TERM EFFECTS OF GH REPLACEMENT THERAPY ON THYROID FUNCTION IN GH DEFICIENCY CHILDREN

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BACKGROUND

Several studies have investigated the effects of GH replacement therapy (GHRT) on thyroid function in children with GH deficiency (GHD) leading to contrasting results.

Indeed, GHRT has been reported to affect the peripheral metabolism of thyroid hormones, to alter TSH secretion by pituitary and to unmask secondary hypothyroidism.

OBJECTIVE

The aim of this study was to evaluate long-term effects of GHRT on thyroid function in a large cohort of children with isolated GHD.

METHODS

Sixty-five children (40 M) aged 9.5 ± 3.7 years with isolated GHD were studied before and during the first three years of GHRT. Clinical parameters (height, weight, BMI and growth velocity) and serum TSH, FT4, FT3 and IGF-1 levels were evaluated at baseline, after 6 months of GHRT and then annually.

RESULTS

As expected, GHRT was associated with a significant increase in height and growth velocity (Table).

A reduction in BMI SDS was reported after 6 months of GHRT (Table).

Table – Clinical parameters of GHD children

	Baseline	6 months	1 year	2 years	3 years
Height (SDS)	-2.73 ± 0.82	-2.42 ± 0.73^a	-2.18 ± 0.72^a	-1.77 ± 0.78^a	-1.52 ± 0.85^a
BMI (SDS)	-0.35 ± 1.21	-0.51 ± 1.20^a	-0.44 ± 1.13	-0.45 ± 1.16	-0.32 ± 1.20
Growth velocity (SDS)	-2.57 ± 1.45	3.30 ± 2.63^a	3.09 ± 3.16^a	2.65 ± 3.21^a	1.62 ± 2.81^a

^a p < 0.05 vs Baseline

At study entry, all GHD children were euthyroid and none of them became hypothyroid during the follow-up.

Six months of GHRT were associated with mild reduction in FT4 and increase in FT3 levels with no differences in TSH concentrations. No further changes were observed during the following years of therapy (Figure 1).

FT4 levels were negatively correlated with IGF-1 concentrations ($r = -0.381$, $p = 0.01$) (Figure 2).

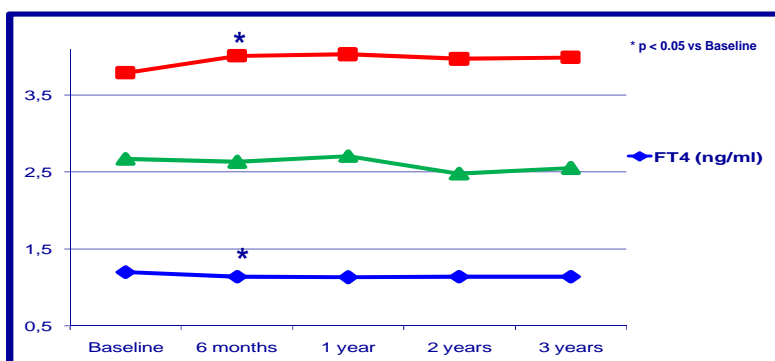


Figure 1 – Thyroid hormones in GHD patients

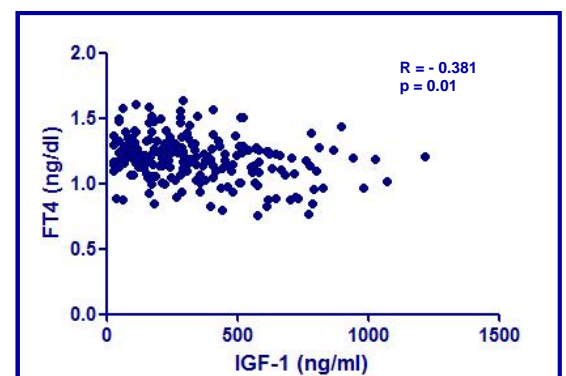


Figure 2 – Correlation between FT4 and IGF-1

CONCLUSION

GHRT in GHD children is associated with a persistent decrease of FT4 concentrations and a persistent increase in FT3 levels which however remain within reference ranges. Whether these mild changes may have a clinical impact should be further investigated.