

Changes of laboratory findings before and after thyroid hormone replacement in a naïve 19.24 year-old female case of ectopic thyroid

Joong Wan Choi, M.D., Phil Soo Oh, M.D.

Pediatrics, Hallym University Medical Center, Chuncheon, South Korea

Nothing to disclose

Background

Hypothyroidism is known to be associated with liver function, cholesterol and some hormone levels including growth hormone (GH). But, there are fewer reports about the gonadotropin levels in thyroid dysfunction

Objectives and hypotheses

We report here some interesting laboratory findings in a 19.24 year-old severe short stature female case of ectopic thyroid

Methods

Laboratory investigations including the combined anterior pituitary function (Cocktail) study were done before and after thyroid hormone replacement.

Results

A 19.24-year-old female presented with short stature; height 141cm (mid-parental height, 167cm), weight 52kg and bone age 13 years. Since 15 years of age, she had periods every three months until last year, but this year every two months. Laboratory investigations showed free T4 <0.40 ng/dL, TSH >100 uIU/mL, ALT/AST 92/63 IU/L, cholesterol 459 mg/dL, total protein/albumin 7.7/5.1 g/dL, and prolactin 94.4 ng/mL. In the 1st day of GH stimulation, successive L-dopa and clonidine tests resulted in 1.4 and 1.5 ng/mL of GH peaks, respectively. In the 2nd day of Cocktail study, insulin stimulation test (Humalog 0.1u/kg, 52 units) resulted in 3.5 ng/mL of GH peak with the lowest blood glucose of 59mg/dL. And, LH basal/peak were 0.5/6.4 mIU/mL and FSH basal/peak were 7.8/11.7 mIU/mL, respectively. Thyroid scan showed ectopic thyroid. In abdominal ultrasonography, fatty liver was suspected and 2cm-sized echogenic mass was found in uterine cervix. After 6 weeks of thyroxine replacement, her thyroid function was 1.84 ng/dL of free T4 and 0.281 uIU/mL of TSH. She lost 6 kg and menstruation was normalized. Laboratory findings of ALT/AST, cholesterol, and prolactin were also normalized; 22/23 IU/L, 140 mg/dL and 16.7 ng/mL, respectively. But, total protein/albumin decreased to 5.7/3.6 g/dL. In the rechecked 1st day of GH stimulation, L-dopa and clonidine tests showed 2.40 and 3.13 ng/mL of GH peaks, respectively. The 2nd day Cocktail test (Humalog 0.1u/kg, 46 units) showed 7.31 ng/mL of GH peak with the lowest blood glucose of 33mg/dL. And, LH basal/peak were 25.6/43.7 mIU/mL and FSH basal/peak were 11.2/15.0 mIU/mL, respectively. In follow-up abdominal ultrasonography, the findings of suspicious fatty liver and echogenic mass in uterine cervix disappeared.

Laboratory items	Before treatment	After 6 weeks of treatment
ALT (IU/L)	92	22
AST (IU/L)	63	23
GGT (IU/L)	73	32
Cholesterol (mg/dL)	459	140
Free T4 (ng/dL)	<0.40	1.84
T3 (ng/dL)	49.9	187.4
TSH (uIU/mL)	>100	0.281
Prolactin (ng/mL)	94.4	16.7
GH peak (L-dopa, ng/mL)	1.4	2.40
GH peak (Clonidine, ng/mL)	1.5	3.13
GH peak (Insulin, ng/mL)	3.5	7.31
LH peak (mIU/mL)	6.4	43.7
FSH peak (mIU/mL)	11.7	15.0
Cortisol peak (mcg/dL)	18.6	23.4

Table 1. Laboratory findings before and after thyroid hormone replacement therapy

Conclusion

In GH stimulation after thyroxine replacement, we found an interesting finding of about 2-fold increases of GH peaks using the three stimulating agents of L-dopa, clonidine and insulin. In GnRH study, LH levels were markedly increased, but just with a little increase in FSH. And, levels of total protein/albumin decreased and the echogenic mass in uterine cervix disappeared after thyroid hormone replacement