Bone homeostasis in children with subclinical hypothyroidism: effects of two-years treatment with levothyoxine

Barbieri Flavia [1], Esposito Andrea [1], D'Acunzo Ida[1], Lorello Paola [1], Di Mase Raffaella [2], Improda Nicola[1], Capalbo Donatella [2]

[1] Pediatric Endocrine Unit, Department of Translational Medical Sciences, University Federico II Naples, Italy

[2] Department of Pediatrics, University Federico II Naples, Italy

Background

Thyroid hormone plays a key role in bone mineral homeostasis and significant alterations in its circulating levels have been associated with an impairment in skeletal growth during childhood.

The effects of subclinical hypothyroidism (SH) on bones have not been studied and the management of this condition is still debated.

Aim

To evaluate the effects of SH and of two-year treatment with levothyroxine (L-T4) on bone mineral density (BMD) in children with persistent mild idiopathic SH.

Methods

Seventeen children (8 males), aged 8.7±1.03 years with mild (TSH levels between 4.2 and 10 mU/l), persistent (≥2 years from the diagnosis) and idiopathic SH were enrolled in the study, and compared to 17 age-, sex- and BMI- matched controls.

At study entry, both groups underwent clinical examination, laboratory evaluation and dual-energy X-ray densitometry (DXA) scan to evaluate the lumbar spine BMD.

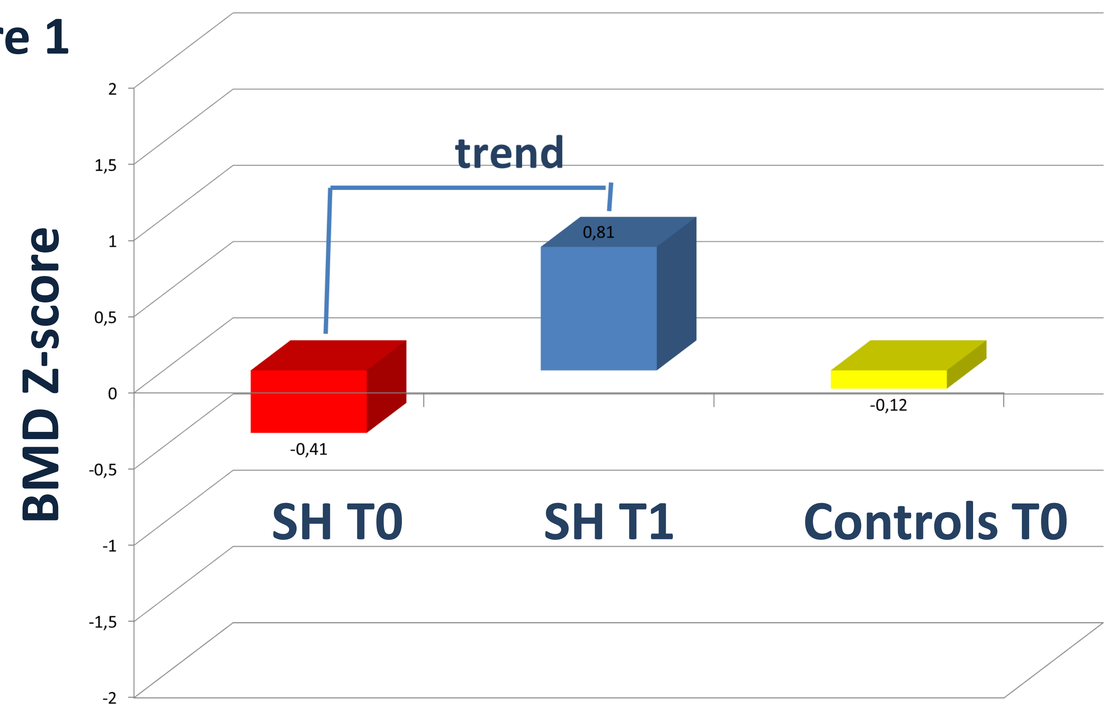
SH children received 2-year L-T4 treatment and were then re-assessed to evaluate changes in bone mineral status.

Results

At study entry (T0), mean BMD Z-score was normal in SH subjects and comparable to healthy controls (-0.41±0.42 vs -0.12±0.25, respectively) (**Figure 1**).

After two years of L-T4 therapy (T1), a trend towards significant increase in BMD z-score was observed in SH children versus basal values (0.81±0.56, p=0.08) (**Figure 1**).

Figure 1



Conclusions

Despite long-term duration, idiopathic SH in children is not associated with impaired lumbar spine BMD.

Two-years of L-T4 treatment do not seem to significantly improve BMD in children with SH.