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.

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.

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).

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.