Effects of Size at Birth, Childhood Growth Patterns and Growth Hormone Treatment on Telomere Length

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Conclusion

Birth size and growth patterns during infancy and childhood are not associated with telomere length in young adulthood

Growth hormone treatment does not have adverse effects on telomere length

Background

Small size at birth and rapid growth in early life are associated with increased risk for cardiovascular disease (CVD) in later life.¹

Short children born small for gestational age (SGA) are treated with growth hormone (GH), inducing catch-up in length.²

Leukocyte telomere length (LTL) is a marker of biological age and shorter LTL is associated with increased CVD-risk.³

Objectives

To investigate whether LTL is influenced by birth size, growth during infancy and childhood, and long-term GH-treatment.

Methods

LTL was analyzed in 545 young adults (17-24 yrs) with differences in birth size and childhood growth patterns.

Previously GH-treated young adults born SGA (SGA-GH, n=75) were compared to untreated short SGA (SGA-S, n=48), SGA with spontaneous catch-up to a normal body size (SGA-CU, n=89), and appropriate for gestational age with a normal body size (AGA-NS, n=135).

LTL was measured using a quantitative PCR assay and expressed as T/S ratio.

Results

Size at birth, weight gain during infancy and childhood and adult body size did not influence LTL (Figure 1).

Female gender and gestational age were positively associated with LTL (β=0.25, p=0.02 and β=0.02, p=0.02 resp.), and smoking negatively (β=-0.12, p=0.03).

After adjustments for gender, age and gestational age, the SGA-GH subgroup had similar LTL as SGA-S (p=0.11), SGA-CU (p=0.80), and AGA-NS (p=0.30) (Figure 2).

Reference


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No conflict of interest