



POSTER PRESENTATION

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Decreasing birth weight is associated with adverse metabolic profile and lower stature in childhood and adolescence

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Objective

We aimed to evaluate the association of birth weight SDS (BWSDS) with insulin resistance, blood pressure, and auxology in children and adolescents born 23–42 weeks of gestation.

Methods

We studied 143 singleton children and adolescents aged 9.3 ± 3.3 years (range 2.0 – 17.9 years). Clinical assessments included auxology, insulin resistance measured by the HOMA2-IR, and blood pressure from sphygmomanometer measurements. Continuous associations were examined and stratified analyses carried out. For the latter, participants were divided into those of below-average birth weight (BBW, <0 SDS) and above-average birth weight (ABW, ≥ 0 SDS).

Results

Irrespective of gestational age, lower BWSDS was associated with progressively increased insulin resistance ($p < 0.0001$) and fasting insulin concentrations ($p < 0.0001$). Decreasing BWSDS was associated with higher systolic ($p = 0.011$) and diastolic ($p = 0.006$) blood pressure. Lower BWSDS was also associated with decreasing stature ($p < 0.010$). The BBW group was ~40% more insulin resistant than ABW participants ($p = 0.004$), with the former also displaying fasting insulin concentrations 37% higher ($p = 0.004$). BBW participants were 0.34 SDS shorter than those of higher birth weight ($p = 0.002$). On average, BBW participants failed to meet their genetic potential, tending to be shorter than their parents ($p = 0.065$). As a result, when corrected for parents' heights, BBW participants were 0.6 SDS shorter than those born of higher birth

weight ($p = 0.001$). Sub-group analyses on participants born appropriate-for-gestational-age ($n = 128$) showed that associations of BWSDS with both insulin resistance and stature remained (although attenuated).

Conclusion

Decreasing BWSDS (even within the normal range) is associated with adverse metabolic profile and lower stature in children and adolescents.

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