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Insights into infancy weight gain patterns for term small-for-gestational-age babies

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Background: Too fast or slow weight gain in infancy is bad for health in later life. In this study, we aim to investigate the optimal weight gain pattern during the first 2 y of life for term small-for-gestational-age (SGA) infants.

Method: We employed data from a longitudinal, community-based cohort study on the growth and development of SGAs collected between 2004 and 2010 in Shanghai, China. Latent class growth analysis (LCGA) was applied to identify weight gain patterns among 3004 SGAs. BMI curves for each latent class from 1 mo to 5 y were produced through mixed-effects regression analysis. Multivariable regression was performed to examine the association between various classes and adverse outcomes (overweight/ obesity/ malnutrition) during 2–5 y.

Result: Five weight gain patterns aged 0–2 y of 3004 term SGAs were identified and labeled as follows--class 1: excessively rapid catch-up growth (10.7%); class 2: rapid catch-up growth (19.7%); class 3: appropriate catch-up growth (55.7%); class 4: slow catch-up growth (10.2%); class 5: almost no catch-up growth (3.7%). A decreasing age at adiposity rebound (AR) and an increasing BMI value were observed from class 5 to 1. Class 1 and 2 showed an early appearance of AR (< 4 y). SGAs in class 1 and 2 had a higher BMI in 2–5 y of life. After adjustment for potential confounding variables, class 1 and 2 were found to have an increased risk of being overweight/ obese. At the same time, we found the risk of malnutrition was especially prominent among SGAs in classes 4 and 5.

Conclusion: Our results suggest that for term SGA infants, catch-up growth that crossing two centile levels, that is, from < 10th to the interval between 25th and 50th ($\Delta WAZ > 1.28$) in the first several months, along with on track growth and maintenance at a median level by age 2 may be the optimal catch-up growth trajectory, minimizing risk of childhood adverse health outcomes.

Notes:

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