Implications of late adiposity rebound

To the Editor:

The increased risk of obesity with early adiposity rebound is well documented, but the clinical significance of late adiposity rebound is not fully understood.[1-3] Moon concluded that late adiposity rebound (≥7 years of age) was significantly associated with a decreased risk of obesity and an increased probability of reversing obesity among kindergarteners.[4] Thus, in considering the transition of the risk of obesity during early childhood, the progress of late adiposity rebound is important.[4]

We would like to add our observations on comparison of late and early adiposity rebound based on body mass index (BMI) and plasma lipoproteins at 12 years of age. The subjects were 217 children in a birth cohort who underwent annual measurements of BMI at 1-16 years of age.[2,3] Relationships were evaluated among the timing of adiposity rebound (early vs late: <3 vs ≥7 years old), timing of entering puberty, and BMI and plasma lipid profiles at 12 years of age. Growth velocities of >7.0 cm per year in girls and >8.0 cm per year in boys were used as an estimation of the time of entering puberty.[5]

The age of onset of puberty was significantly lower in children with adiposity rebound at <3 years compared with those with adiposity rebound at ≥7 years in girls (8.5 ± 1.51 years [n = 8] vs 9.8 ± 0.63 years [n = 10]; $P < .05$) and in boys (11.3 ± 0.95 years [n = 7] vs 12.4 ± 0.96 [n = 16]; $P < .05$). Early adiposity rebound is known to be associated with maturation.[6] In a combined examination of boys and girls, the mean BMI at 12 years of age was lower in children with late adiposity rebound than in those with early adiposity rebound (17.4 [n = 26] vs 22.5 [n = 15]; $P < .001$) and the mean plasma lipid profiles at 12 years of age in children with late adiposity rebound (n = 26) showed a less atherogenic pattern compared with those with early adiposity rebound (n = 15): high-density lipoprotein cholesterol, 62.2 mg/dL vs 70.0 mg/dL ($P < .01$); triglycerides, 69.3 mg/dL vs 59.3 mg/dL ($P < .05$); apolipoprotein B, 86.8 vs 70.3 ($P < .05$); and atherogenic index 1.81 vs 1.51 ($P < .05$).[7]

It is possible that the increased energy demand for the developing brain in early childhood is related to late adiposity rebound (reduced insulin resistance).[8,9] Therefore, it is important to clarify the importance of late adiposity rebound not only from the viewpoint of the path to obesity, but also from the perspective of development of brain health in children.

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