Which Period of Growth Is Determinant for Blood Pressure?

To the Editor:

Jones et al,1 nicely showed that blood pressure at the age of 10 years was strongly associated with growth during and after infancy and much more than with both prenatal and early postnatal growth. This may suggest that the period of growth before the age of 10 years is a critical period2 for the determination of blood pressure.

However, they did not assess the effect of growth on blood pressure at other ages during childhood and adolescence. Using conditional growth modeling, we assessed the association among birth weight, weight change, and blood pressure across the entire age span of childhood and adolescence in 3 large school-based cohorts including 2743 children.3 Children had blood measurement at ages 5.5, 9.1, 12.5, and 15.5 years, respectively. Weight changes during successive age periods since birth contributed to blood pressure at all of the ages. Interestingly, the strength of the association between weight change and blood pressure increased throughout successive age periods, with the contribution of birth weight or weight change during the first year of life being weak.

For instance, systolic blood pressure in boys aged 9.1 years was associated strongly with weight change (expressed in z score) between 1.0 and 5.5 years, as well as with weight change between 5.5 and 9.1 years, and only marginally with birth weight or weight change between 0 and 1 year (Figure). This is consistent with the results of Jones et al.1 However, we also observed that systolic blood pressure in boys aged 15.5 years was strongly associated with change in weight between 1.0 and 12.5 years but more strongly with weight change between 12.5 and 15.5 years.

Rather than suggesting that weight change before 9 or 10 years is critical for blood pressure, this indicates that blood pressure is more responsive, at all ages, to recent rather than earlier weight changes.3

Disclosures

None.

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