

Birth Weight, BP Link Differs for Black, White Kids

Biracial study raises questions about the “fetal programming” theory of disease risk.

REVIEWED BY ANUSHA H. HEMACHANDRA, MD

Higher birth weight is linked to increased blood pressure later in life in black but not white children, according to the results of a study in *Journal of the American Society of Nephrology* (ASN).

According to a news release from the ASN, the findings raise new questions about a recent theory that infants with lower birth weights are at increased risk of hypertension and other health problems later in life. They also suggest that, if blood pressure is indeed “programmed” at birth, the process may differ by race.

Anusha H. Hemachandra, MD, of The Johns Hopkins University School of Medicine, and colleagues analyzed data on approximately 30,000 black and white children in the United States, from birth through age 7 years. The study is called the US National Collaborative Perinatal Project, which followed 58,960 pregnant women and their resultant offspring. Previous studies of the link between birth weight and blood pressure have been performed mainly in white populations, said Dr. Hemachandra. “The lack of data on African-Americans prompted us to study a large biracial American cohort to examine the association between birth weight and blood pressure at age 7 years in both black and white populations.”

RELATIONSHIP NOT WHAT WAS EXPECTED

The investigators found a direct relationship between birth weight and blood pressure — but only in black children and in a direction opposite from that expected. “For African-American babies, the heavier they were at birth, the higher their risk for high blood pressure in childhood,” said Dr. Hemachandra. “This is in contrast to the white children in the study, who had no significant relationship between birth weight and blood pressure.”

For black children, the relationship between birth weight and blood pressure remained significant after adjustment for factors related to the mother. Maternal poverty and lower education were strong risk factors for high blood pressure in children.

Because it is an indicator of restricted growth in the

womb, low birth weight has been linked to an increased risk of various chronic diseases in adulthood. “First publicized by Dr. David Barker in Great Britain, the *fetal programming* or fetal origins of adult disease hypothesis suggests that stresses faced by the fetus in the womb may alter its physiology permanently,” explained Dr. Hemachandra. “These adaptations help the fetus survive the stress in utero, but are not helpful and may even be dangerous in postnatal life, leading to an increased risk for chronic diseases such cardiovascular disease and type 2 diabetes.”

THEORY OF FETAL PROGRAMMING

Under the theory of fetal programming, the high rates of hypertension that exist in the black community might be explained by an increased prevalence of low-birth-weight infants. These new results suggest, however, that high-birth-weight black babies are the ones at increased risk for hypertension later in life, whereas white infants show no relationship between birth weight and blood pressure. This racial difference suggests that, if hypertension risk is programmed during the fetal period, the risk may be race-specific and at least partly affected by genetics.

“Our study adds to the growing body of evidence suggesting that public health initiatives to prevent chronic diseases such as hypertension may need to begin as early as the prenatal and early childhood period,” Dr. Hemachandra concluded. “Exploring racial disparities in the developmental origins of health and disease is a critical step toward understanding the mechanisms of fetal programming and eventually developing interventions against chronic disease.” ■

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Hemachandra AH, Klebanoff MA, Furth SL. Racial disparities in the association between birth weight in the term infant and blood pressure at age 7 years: Results from the Collaborative Perinatal Project. *J Am Soc Nephrol*. Published online ahead of print. Doi: 10.1681/ASN.2005090898.