Birth Weight and Retinal Vascular Changes

To the Editor:

Liew et al.1 describe an association between low birth weight and narrower retinal arterioles in middle-aged-to-older adults in the Atherosclerosis Risk in Communities Study. These data constitute an important contribution to the current literature on the use of retinal image analysis in hypertension research. Nevertheless, the significance of the results could be better delineated, and several important aspects in this field of research deserve further discussion.

As proposed by the authors, the observed association between lower birth weight and narrower retinal arterioles may help explain how early adverse life factors, such as abnormal fetal developments reflected as low birth weight, could pose a threat to cardiovascular health later in life. This sound hypothesis is supported by previous studies demonstrating a consistent association of retinal arteriolar narrowing with increased risk of incident hypertension.2 In view of the new findings by Liew et al.,1 key question thus calls for an answer: “Is the association of retinal arteriolar narrowing and hypertension risk magnified in people with low birth weight compared to those with normal birth weight?” The precious incidence data on hypertension in the Atherosclerosis Risk in Communities Study may allow the authors to help us answer this question. In addition, the authors may also want to test for potential interactions between retinal arteriolar narrowing and low birth weight on the risk of hypertension.

Furthermore, the specific population of the Atherosclerosis Risk in Communities Study should be noted. The Atherosclerosis Risk in Communities Study consists of middle-aged-to-older white and black subjects. In a population of young healthy Asian children, who were relatively free of confounding effects from systemic (eg, smoking, medications, chronic diabetes, or hypertension) and ocular (eg, glaucoma and retinopathy) risk factors, lower birth weight was found to be associated with wider retinal venules.3 Unlike retinal arteriolar narrowing, venular widening may signify a more adverse metabolic profile (eg, associated with obesity and diabetes) and has similarly been shown to predict future cardiovascular events.4 The reasons underlying the disparity of the results are unclear, but it is possible that the association of birth weight and retinal vascular caliber may in fact vary among different ethnic populations (or genetic make-up).

Finally, retinal vascular caliber represents merely 1 of the many aspects of the retinal vascular geometry. There is emerging evidence that other novel geometric measures of the retinal vasculature (eg, branching angle and tortuosity) may also be associated with low birth weight.5 It is, therefore, clear that there is still much work to be done to fully uncover the potential of retinal image analysis in advancing our understanding of the complex pathogenesis of hypertension and its related systemic vascular complications.

Disclosures

None.

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