Letter by Mascitelli et al Regarding Ethnic Differences in Carotid Intima-Media Thickness Between UK Children of Black African-Caribbeans and White Europeans

To the Editor:

Whincup et al reported that carotid intima-media thickness levels were higher in black African-Caribbean children than in white European children at the end of the first decade of life. The difference was not explained by conventional cardiovascular risk markers. We suggest that hypovitaminosis D might in part explain this association.

The classical role of vitamin D is to regulate calcium homeostasis. However, it has become clear that the extraskel-etal health benefits of vitamin D are numerous. Vitamin D receptors have a broad distribution that includes vascular smooth cells, macrophages, and lymphocytes. Directly or indirectly, 1,25-dihydroxyvitamin D (the biologically active form of vitamin D) regulates the expression of a number of proteins relevant to the arterial wall, such as vascular endothelial growth factor, matrix metalloproteinase type 9, myosin, elastin, and type I collagen.

Low levels of 25-hydroxyvitamin D [25(OH)D], the most commonly measured indicator of vitamin D status, are known to influence macrophage and lymphocyte activity in atherosclerotic plaques and to promote chronic inflammation in the artery wall. Not surprisingly, low 25(OH)D levels have been shown to be associated with increased carotid intima-media thickness and maximal carotid plaque thickness in those with plaque, with 25(OH)D contributing in a robust manner to the variance in both.

However, a nationally representative sample of United States children aged 1 to 21 years in the National Health and Nutrition Examination Survey 2001 to 2004 provided data on the prevalence of 25(OH)D deficiency and its correlates. It was found that 9% (7.6 million) of United States children and adolescents had 25(OH)D deficiency (<15 ng/mL), and 61%, representing 50.8 million United States children and adolescents, were 25(OH)D-insufficient (15–29 ng/mL). Of note, nonwhite race/ethnicity was a strong predictor of 25(OH)D deficiency. These associations were present even after adjustment for potentially modifiable risk factors for a deficient vitamin D status, including obesity, television watching, video game and computer use, milk intake, and vitamin D supplement, thus suggesting that there are other factors contributing to this disparity. Among the latter, a particular factor could be represented by increased melanin in the skin of black African-Caribbean children, which may lead to a decrease in production of vitamin D per the same dose of exposure to ultraviolet radiation.

Therefore, maintaining an optimal vitamin D status could represent a valid tool to reduce carotid intima-media thickness levels from childhood onward. This strategy may be particularly important in black African-Caribbeans.

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