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Why is Preterm Birth Stubbornly Higher in African-Americans?

Sara A Mohamed^{1,2,*}, Chandra Thota, Paul C Browne, Michael P Diamond, and Ayman Al-Hendy

¹Department of Obstetrics and Gynecology, Georgia Regents University, USA

²Department of Obstetrics and Gynecology, Mansoura faculty of medicine, Egypt

Opinion

In the US, 70% of perinatal mortalities are in premature infants [1]. CDC (Center of Disease Control and Prevention) reported that in 2012, 1 of every 9 babies was born premature in the United States [2]. According to the March of Dimes 2014 Premature Birth Report Card: Hispanic 11.6%, White 10.3%, and Black 16.5% [3]. Additionally, although most black women give birth at term, on average, black women are about 60% more likely to have a premature baby compared to white women (CDC 2012). The reasons for the difference between black and white/Hispanic women remain unknown and are an area of intense research [2]. Limited understanding and lack of reliable biomarkers contribute to the difficulty in early identification of at risk individuals then the implementation of effective preventive strategy and treatment protocol of preterm birth (PTB). Higher incidence of PTB among African-Americans has been attributed to social determinants of health [1]. Recent CDC report suggests that social determinants of health for Hispanics are similar to those of African-Americans [4] but PTB is persistently higher in African-Americans compared to Caucasians or Hispanics [1]. The question is why? Since, the most common conditions that are associated with PTB are infection and inflammation, pathways regulating these processes may provide therapeutic targets and improve prevention strategies [5]. As vitamin D is important in regulation of immune responses, we hypothesize that insufficiency (serum level 21–29 ng/ml) or deficiency (serum level < 20 ng/ml) of vitamin D, enhance susceptibility to infection and/or pro-inflammatory milieu, and increase risk of PTB [6]. It was reported earlier that Hypovitaminosis D and PTB are more prevalent among African Americans (AAs) than their Caucasian (Cau) counterparts [7]. Vitamin D (vit D) deficiency in AA is attributed to reduced UV light penetration through skin due to higher melanin pigmentation and consequent decrease in the cutaneous vit D synthesis. Racial differences could also be attributable to varying dietary intake of vit D [8,9]. Indeed, we have recently reported that vitamin D deficiency is associated with an increased risk of PTB in African-Americans and Caucasians [10]. Additionally, we have demonstrated that vitamin D elicits anti-inflammatory response, and decreases expression of contractile factors in human uterine smooth muscle cells [11]. Furthermore, specific vitamin D receptor polymorphism has been associated with increased risk of spontaneous idiopathic preterm birth [12]. As vitamin D

*Corresponding author: Sara Mohamed, Research scholar, Department of Obstetrics and Gynecology, Medical college of Georgia, Georgia Regents University, 1459 Laney walker Blvd. Augusta, GA 30912, Room No: CB 2210, Tel: (518)-419-7301; Fax: (706)-721-6211; samohamed@gru.edu.

deficiency is epidemic among African-Americans, we believe the stubbornly high PTB rate in African-Americans is, at least partially, a consequence of low Vitamin D levels. Importantly, Endocrine Society recommends not only screening of all pregnant women for vitamin D deficiency but also treating vitamin D deficiency once diagnosed [13]. The extent to which health care providers adhere to this particular recommendation however is unclear. Among obstetrical societies, ACOG has issued brief committee opinion in July 2011 stating that there is insufficient evidence to recommend vitamin D supplementation for prevention of preterm birth [14]. However, in light of accumulating compelling recent literature [11,13]. Since issuance of that committee opinion, we would encourage reconsideration of evaluating and possibly adapting the Endocrine Society policy (which is co-sponsored by The Institute of Medicine), which could likely have positive impact and may help reduced the persistently high PTB rate and associated high infant mortality rate in this population. This is a simple, inexpensive, yet potentially important step that can be applied now, while we all, as a nation, are attempting to address chronic social challenges to improve health for all.

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