

Adequate Vitamin D during Pregnancy Reduces the Risk of Premature Birth by Reducing Placental Colonization by Bacterial Vaginosis Species

The recent paper by Fichorova et al. (1) reported that placental colonization by bacterial species common in bacterial vaginosis (BV) was linked to an increased risk of premature birth and that targeting this colonization could reduce the risk of premature birth and subsequent inflammation-provoked late sequelae.

Overlooked in the paper was any mention of vitamin D. At least two papers have reported that maternal vitamin D deficiency during pregnancy is associated with an increased risk of BV. In one, a statistically significant inverse correlation between serum 25-hydroxyvitamin D [25(OH)D] and BV was found for black women but not white women (2). In another, vitamin D deficiency was associated with BV only in pregnant women; however, for nonpregnant women, black race was associated with risk (3).

Vitamin D reduces the risk of bacterial infections through induction of cathelicidin and defensins (4) and has been found associated with reduced risks for several types of diseases linked to bacterial infections, including dental caries, pneumonia, severe sepsis, and tuberculosis (5). Serum 25(OH)D levels of 30 to 40 ng/ml are indicated for reduced risk of bacterial infections (6).

Pregnant women are generally not advised to obtain sufficient vitamin D during pregnancy. According to Hollis, pregnant women require up to 6,400 IU/day of vitamin D₃ (7). His group conducted a randomized controlled trial of vitamin D supplementation with up to 6,000 IU/day and found no adverse effects, including effects on serum or urine calcium levels (8).

REFERENCES

1. Fichorova RN, et al. 2011. Maternal microbe-specific modulation of inflammatory response in extremely low-gestational-age newborns. *mBio* 2(1):e00280-10.
2. Bodnar LM, Krohn MA, Simhan HN. 2009. Maternal vitamin D deficiency is associated with bacterial vaginosis in the first trimester of pregnancy. *J. Nutr.* 139:1157–1161.
3. Hensel KJ, Randis TM, Gelber SE, Ratner AJ. 2011. Pregnancy-specific association of vitamin D deficiency and bacterial vaginosis. *Am. J. Obstet. Gynecol.* 204:41.e1–41.e9.
4. Hewison M. Antibacterial effects of vitamin D. *Nat. Rev. Endocrinol.*, in press.
5. Grant WB, Boucher BJ. 2011. Requirements for vitamin D across the lifespan. *Biol. Res. Nurs.* 13:120–133.
6. Yamshchikov AV, et al. 2010. Vitamin D status and antimicrobial peptide cathelicidin (LL-37) concentrations in patients with active pulmonary tuberculosis. *Am. J. Clin. Nutr.* 92:603–611.
7. Hollis BW. 2007. Vitamin D requirement during pregnancy and lactation. *J. Bone Miner. Res.* 22(Suppl. 2):V39–V44.
8. Hollis BW, Wagner CL. 2009. Randomized controlled trials to determine the safety of vitamin D supplementation during pregnancy and lactation, p. 134. Fourteenth Workshop Vitamin D, Brugge, Belgium, 4 to 8 October 2009.

William B. Grant

Sunlight, Nutrition, and Health Research Center
San Francisco, California, USA

Published 29 March 2011

Citation Grant WB. 2011. Adequate vitamin D during pregnancy reduces the risk of premature birth by reducing placental colonization by bacterial vaginosis species. *mBio* 2(2):e00022-11. doi:10.1128/mBio.00022-11.

Copyright © 2011 Grant. This is an open-access article distributed under the terms of the Creative Commons Attribution-Noncommercial-Share Alike 3.0 Unported License, which permits unrestricted noncommercial use, distribution, and reproduction in any medium, provided the original author and source are credited.

Address correspondence to wgrant@infonline.net.