



Abstract Quiz by Laura King, MA, ELS

Directions: The *AMA Manual of Style* recommends the use of structured abstracts for original research reports ([section 2.5](#)). These abstracts should be no more than 300 words and use the following headings: Context, Objective, Design, Setting, Patients (or Participants), Interventions (include only if there are any), Main Outcome Measures, Results, and Conclusions.

Reformat the following unstructured abstract (adapted from *Arch Neurol*. Published online November 8, 2010. doi:10.1001/archneurol.2010.291) into a structured abstract using the listed headings.

During the last decade, a low level of vitamin D, a potent immunomodulator, has emerged as an important risk factor for multiple sclerosis (MS) and other autoimmune diseases and certain cancers. We aimed to determine whether low levels of 25-hydroxyvitamin D (25[OH]D) contribute to the increased risk of postpartum MS relapses. We studied outpatients identified through membership records of Kaiser Permanente Northern California or Stanford University outpatient neurology clinics. We prospectively followed up a cohort of 28 pregnant women with MS through the postpartum year and assessed exposures and symptoms through structured interviews. Total serum 25(OH)D levels were measured during the third trimester and 2, 4, and 6 months after giving birth and relapse rates were determined. The data were analyzed using longitudinal multivariable methods. Fourteen women (50%) breastfed exclusively, and 12 women (43%) relapsed within 6 months after giving birth. During pregnancy, the average 25(OH)D level was 25.4 ng/mL (range, 13.7-42.6 ng/mL) and was affected only by season ($P = .009$). In contrast, in the postpartum period, 25(OH)D levels were significantly affected by breastfeeding and relapse status. Levels of 25(OH)D remained low in the exclusive breastfeeding group, yet increased significantly in the nonexclusive breastfeeding group regardless of season ($P = .007$, unadjusted; $P = .02$, adjusted for season). By 4 and 6 months after childbirth, the average 25(OH)D level was 5 ng/mL lower in the women who breastfed exclusively compared with the nonbreastfeeding group ($P = .001$). Pregnancy and exclusive breastfeeding are strongly associated with low 25(OH)D levels in women with MS. However, these lower vitamin D levels were not associated with an increased risk of postpartum MS relapses. These data suggest that low vitamin D level in isolation is not an important risk factor for postpartum MS relapses.

ANSWER

Context: During the last decade, a low level of vitamin D, a potent immunomodulator, has emerged as an important risk factor for multiple sclerosis (MS) and other autoimmune diseases and certain cancers.

Objective: To determine whether low levels of 25-hydroxyvitamin D (25[OH]D) contribute to the increased risk of postpartum MS relapses.

Design: Prospective cohort study.

Setting: Kaiser Permanente Northern California or Stanford University outpatient neurology clinics.

Patients: Twenty-eight pregnant women with MS.

Interventions: We prospectively followed up women through the postpartum year and assessed exposures and symptoms through structured interviews. Total serum 25(OH)D levels were measured during the third trimester and 2, 4, and 6 months after giving birth and relapse rates were determined.

Main Outcome Measures: Serum 25(OH)D levels and relapse rates. The data were analyzed using longitudinal multivariable methods.

Results: Fourteen women (50%) breastfed exclusively, and 12 women (43%) relapsed within 6 months after giving birth. During pregnancy, the average 25(OH)D level was 25.4 ng/mL (range, 13.7-42.6 ng/mL) and was affected only by season ($P = .009$). In contrast, in the postpartum period, 25(OH)D levels were significantly affected by breastfeeding and relapse status. Levels of 25(OH)D remained low in the exclusive breastfeeding group, yet increased significantly in the nonexclusive breastfeeding group regardless of season ($P = .007$, unadjusted; $P = .02$, adjusted for season). By 4 and 6 months after childbirth, the average 25(OH)D level was 5 ng/mL lower in the women who breastfed exclusively compared with the nonbreastfeeding group ($P = .001$).

Conclusion: Pregnancy and exclusive breastfeeding are strongly associated with low 25(OH)D levels in women with MS. However, these lower vitamin D levels were not associated with an increased risk of postpartum MS relapses. These data suggest that low vitamin D level in isolation is not an important risk factor for postpartum MS relapses.