Abstract


Association between serum folate and vitamin B-12 and outcomes of assisted reproductive technologies.

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BACKGROUND: Preconceptional folate and vitamin B-12 have been linked to beneficial reproductive outcomes in both natural pregnancies and those after assisted reproductive technology (ART) treatment.

OBJECTIVE: The objective of the study was to evaluate the associations of serum folate and vitamin B-12 with ART outcomes.

DESIGN: This analysis included a random sample of 100 women (154 ART cycles) participating in a prospective cohort study [Environment and Reproductive Health (EARTH)] at the Massachusetts General Hospital Fertility Center (2007-2013). Serum folate and vitamin B-12 were measured in blood samples collected between days 3 and 9 of treatment. Generalized estimating equations with adjustment for age, BMI, and race were used to evaluate the association of serum folate and vitamin B-12 with ART outcomes.

RESULTS: Women in the highest quartile of serum folate (>26.3 ng/mL) had 1.62 (95% CI: 0.99, 2.65) times the probability of live birth compared with women in the lowest quartile (<16.6 ng/mL). Women in the highest quartile of serum vitamin B-12 (>701 pg/mL) had 2.04 (95% CI: 1.14, 3.62) times the probability of live birth compared with women in the lowest quartile (<439 pg/mL). Suggestive evidence of an interaction was observed; women with serum folate and vitamin B-12 concentrations greater than the median had 1.92 (95% CI: 1.12, 3.29) times the probability of live birth compared with women with folate and vitamin B-12 concentrations less than or equal to the median. This translated into an adjusted difference in live birth rates of 26% (95% CI: 10%, 48%; P = 0.02).

CONCLUSION: Higher serum concentrations of folate and vitamin B-12 before ART treatment were associated with higher live birth rates among a population exposed to folic acid fortification. This trial was registered at clinicaltrials.gov as NCT00011713.

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