Abstract


Association between sex steroids, ovarian reserve, and vitamin D levels in healthy nonobese women.

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CONTEXT: Vitamin D maintains calcium and phosphorous homeostasis and promotes bone mineralization; however, its nonskeletal functions are increasingly being recognized. Recent evidence supports a role for vitamin D in reproductive potential, but few studies have investigated the potential effects of vitamin D on reproductive hormone biosynthesis and ovarian reserve.

OBJECTIVE: The aim of this study was to determine the relationships between the serum level of vitamin D, reproductive hormone levels, and ovarian reserve in healthy nonobese women.

DESIGN: This was a cross-sectional study.

SETTING: The study was performed at the Fertility Center at CHA Medical Center.

PARTICIPANTS: Seventy-three healthy women volunteers participated in this study. The participants were nonobese parous women with regular menstrual cycles and no history of infertility.

MAIN OUTCOME MEASURES: We determined serum levels of vitamin D, steroid hormones, SHBG, ovarian reserve markers, homeostatic model assessment of insulin resistance index, and lipid profiles.

RESULTS: In linear regression analysis adjusting for age, body mass index, homeostatic model assessment of insulin resistance, and lipid profile, serum vitamin D level positively correlated with total T (P < .001) and free androgen index (P < .001) but did not correlate with dehydroepiandrosterone sulfate or other steroid hormones. The spline regression-suggested relationship between 25-hydroxyvitamin D and total T was most pronounced at a 25-hydroxyvitamin D concentration greater than 13 ng/mL (β-coefficient 2.374, 95% confidence interval 1.435-3.313). The serum vitamin D level was not associated with the levels of ovarian reserve markers.

CONCLUSION: Our study revealed a positive correlation between serum vitamin D level and T level in healthy nonobese women, suggesting that vitamin D may increase fertility through the modulation of androgen activity. The possible causality of the relationship between vitamin D and T deserves further investigation.

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