Effect of vitamin D3 treatment on glucose metabolism and menstrual frequency in PCOS women - a pilot study.

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Abstract

Background: Women with polycystic ovary syndrome (PCOS) frequently suffer from metabolic disturbances, in particular from insulin resistance. Accumulating evidence suggests that vitamin D deficiency may contribute to the development of insulin resistance. Hence, we aimed to examine the effect of vitamin D supplementation on metabolic and endocrine parameters in PCOS women. Methods: 57 PCOS women were included in the study. PCOS women received 20.000 IU cholecalciferol weekly for 24 weeks. Anthropometric measures, oral glucose tolerance test, and blood analyses of endocrine parameters were performed at baseline and after 12 weeks (V2) and 24 weeks (V3). Results: 46 PCOS women finished the study. 25-hydroxyvitamin D (25[OH]D) levels significantly increased from 28.0±11.0 ng/ml at baseline to 51.3±17.3 and 52.4±21.5 at V2 and V3, respectively (p<0.001). We observed a significant decrease of fasting and stimulated glucose (V3, p<0.05) and C-peptide levels (V2 and 3, p<0.001) after vitamin D treatment. Moreover, triglyceride and estradiol levels significantly decreased at V3 (p=0.001) and V2 (p=0.022), respectively, whereas total cholesterol (V2, p=0.008) and LDL cholesterol levels (V2, p=0.005; V3, p=0.026) significantly increased after vitamin D treatment. There were no changes in androgens. At V2, 14 out of 46 PCOS women previously affected by menstrual disturbances (30.4%) reported improvement of menstrual frequency; at V3, 23 out of 46 women (50.0%), who were oligo- or amenorrheic at baseline reported improvement. Discussion: Our results suggest that vitamin D treatment might improve glucose metabolism and menstrual frequency in PCOS women. Further randomized controlled trails are warranted to confirm our findings.

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