

Effect of Vitamin D3 on Polycystic Ovary Syndrome Prognosis, Anthropometric and Body Composition Parameters of Overweight Women: A Randomized, Placebo-Controlled Clinical Trial

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Abstract : Vitamin D deficiency and overweight are common in women suffering from polycystic ovary syndrome (PCOS). Weight gain in PCOS is an important factor for the development of menstrual dysfunction and signs of hyperandrogenism and alopecia. Features of PCOS such as oligomenorrhea can be predicted by anthropometric measurements as body mass index (BMI). Therefore, the aim of this trial was to study the effect of 50,000 IU/week of vitamin D₃ supplementation on the body composition and on the anthropometric measurements of overweight women with PCOS and to examine the impact of this effect on ovaries ultrasonography and menstrual cycle regularity. The study design was a prospective randomized, double-blinded placebo-controlled clinical trial conducted on 60 overweight Jordanian women aged (18-49) years with PCOS and vitamin D deficiency. The study participants were divided into two groups; vitamin D group (n = 30) who were assigned to receive 50,000 IU/week of vitamin D₃ and placebo group (n = 30) who were assigned to receive placebo tablets orally for 90 days. The anthropometric measurements and body composition were measured at baseline and after treatment for the PCOS and vitamin D deficient women. Also, assessment of the participants' picture of ovaries by ultrasound and menstrual cycle regulatory were performed before and after treatment. Results showed that there were no significant (p > 0.05) differences between the placebo and vitamin D group basal 25(OH)D levels, body composition and anthropometric parameters. After treatment, vitamin D group serum levels of 25(OH)D increased (12.5 ± 0.61 to 50.2 ± 2.04 ng/mL, (p < 0.001), and decreased (50.2 ± 2.04 to 48.2 ± 2.03 ng/mL, p < 0.001) after 14 days of vitamin D₃ treatment cessation. There were no significant changes in the placebo group. In the vitamin D group, there were significant (p < 0.001) decreases in body weight, BMI, waist, and hip circumferences and fat mass. In addition, there were significant increases (p < 0.05) in fat free mass and total body water. These improvements in both anthropometric and body composition as well as in 25(OH)D concentrations, resulted in significant improvements in the picture of PCOS women ovaries ultrasonography and in menstrual cycle regularity, where nearly most of them (93%) had regular cycles after vitamin D₃ supplementation. In the placebo group, there were only significant decreases (p < 0.05) in waist and hip circumferences. It can be concluded that vitamin D supplementation improving serum 25(OH)D levels and PCOS prognosis by reducing body weight of overweight PCOS women and regulating their menstrual cycle.

Keywords : anthropometric, overweight, polycystic ovary syndrome, vitamin D₃

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