

## **Status of 25-(OH) Vitamin D<sub>3</sub> levels among young women with polycystic ovarian syndrome (PCOS).**

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Vitamin D deficiency (VDD) is seen in 70 to 100% of apparently health population in India. Polycystic ovary syndrome (PCOS) is also in epidemic proportions in the country. VDD is incriminated in insulin resistance (IR), the central driver of PCOS pathophysiology, but data is scarce from our country. We aimed to assess the magnitude of VDD among Indian women with PCOS and also investigated its relation to clinical, biochemical, hormonal and IR markers. Among total of 2792 women aged 18-40 years, 860 were PCOS (Rottardam criteria, 2003), 758 pre-PCOS women and 1174 healthy controls. Detailed medical history, clinical examination, biochemical, hormonal, and IR parameters were assessed. Lips classification was used to assess Vitamin D status and were graded as VD deficient (<20ng/ml), VD insufficient ( $\geq 20-29$ ng/ml) and VD sufficient ( $\geq 30-100$ ng/ml). Student t-test and ANOVA were used to evaluate the differences in the means of various parameters. Correlations were investigated by Pearson Correlation. The mean age ( $29.21 \pm 6.63$  vs.  $30 \pm 6.13$  years) and BMI ( $24.64 \pm 4.34$  vs.  $24.44 \pm 4.18$  Kg/m<sup>2</sup>) of PCOS cases and controls was comparable. The mean number of menstrual cycles per year ( $8.57 \pm 2.91$  vs.  $12 \pm 0.7$ ;  $p < 0.001$ ) was significantly lower while as mFG scores ( $5.86 \pm 5.76$  vs.  $1.08 \pm 2.13$ ;  $p < 0.000$ ) and serum total testosterone ( $0.52 \pm 0.27$  vs.  $0.27 \pm 0.13$  ng/ml;  $p < 0.001$ ) levels were significantly higher among women with PCOS as compared to healthy women. The serum vitamin D<sub>3</sub> levels were lowest in the PCOS group ( $9.11 \pm 11.41$ ) followed by Pre-PCOS group ( $16.11 \pm 10.86$ ) and control group ( $17.20 \pm 10.80$ ) ( $p < 0.001$ ). The HOMA-IR ( $3.74 \pm 4.39$  vs.  $3.40 \pm 3.86$ ;  $p < 0.000$ ) was significantly elevated among VD deficient PCOS women than VD sufficient PCOS women ( $p < 0.021$ ). The serum 25OHD<sub>3</sub> correlates positively with serum calcium ( $r = 0.1445$ ;  $p < 0.05$ ), visceral adipose index ( $r = 0.7289$ ;  $p < 0.05$ ), serum total cholesterol ( $r = 0.2701$ ;  $p < 0.05$ ) and serum total triglyceride ( $r = 0.5628$ ;  $p < 0.05$ ) and negatively with serum testosterone ( $r = -0.2131$ ;  $p < 0.05$ ). VDD is highly prevalent in PCOS

women and the magnitude of VDD worsens the biochemical, hormonal and IR parameters among women with PCOS.