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TITLE

VITAMIN D DEFICIENCY IS NOT RELATED TO INSULIN RESISTANCE IN NORMAL WEIGHT PCOS WOMEN

AUTHOR/S

Virtej I (GR) [1], Vartej P (RO) [2]

ABSTRACT

Context:Current data suggest a negative correlation between vitamin D status and insulin resistance in women with PCOS. Controversies persist whether vitamin D deficiency and insulin resistance are causally interrelated or whether they depend on body weight.

Objective:To evaluate the influence of serum 25-hydroxyvitamin D levels on insulin resistance in normal and obese/overweight women with PCOS.

Methods: 86 women with PCOS with mean age 25.8 ± 8.6 years and mean body mass index BMI 27.8 ± 4.9 kg/m² were divided into two groups according to their BMI: normal weight (n=36 cases) and overweight /obese (n=50 cases). Parameters measured: fasting plasma glucose and insulin with calculation of homeostasis model assessment of insulin resistance HOMA-IR, serum 25-hydroxyvitamin D(25-OHD3), serum total testosterone (normal range 0.2-1.2 ng/dl). HOMA-IR value >2.5 was diagnosing insulin resistance. Normal level of 25-OH D3 was defined as greater than 30 ng/ml; levels below 20 ng/ml were considered as vitamin D deficiency. **Results:** Mean 25-OHD3 serum values in PCOS patients were 16.3 ± 5.7 ng/ml, with 70% of all cases being deficient. 94% of obese PCOS had vitamin D deficiency. Mean 25-OHD3 levels were significantly lower in obese and overweight PCOS patients (15.27 ± 5.4 ng/ml) compared to normal weight PCOS (18.3 ± 4.7 ng/ml). HOMA-IR mean values were 1.75 ± 0.8 in the normal BMI group and 2.82 ± 1.07 in the obese/overweight BMI group. Vitamin D levels showed significant negative correlation with HOMA-IR ($r = -0.51, p < 0.01$) and total testosterone levels ($r = -0.3, p < 0.05$) only in the overweight/obese PCOS group. **Conclusions:** Low serum 25-OHD3 is negatively correlated with insulin resistance and androgen levels only in obese and overweight PCOS women, suggesting the role of obesity in vitamin D deficit. Vitamin D deficiency is not related to insulin resistance in normal weight PCOS women.

INSTITUTE

[1] Private Center Endocrinology Trikala and University of Medicine "Carol Davila" Bucharest Romania, [2] University of Medicine Bucharest "Carol Davila" Romania