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Evaluation of effect of vitamin D supplementation on serum AMH in vitamin D deficient PCOS women**Swati Sharma**

Vivekananda Polyclinic and Institute of Medical Sciences, India

Context: PCOS is characterized by oligo or anovulation, clinical or biochemical hyperandrogenemia, and/or polycystic ovaries on ultrasonography. Vitamin D plays a role in ovulation in PCOS.

Objective: To correlate vitamin D levels with serum AMH after vitamin D supplementation in vitamin D deficient PCOS women.

Materials & Methods: The study design used was observational, comparative and interventional. All consenting females diagnosed with PCOS according to Rotterdam criteria in the age group of 16–40 years were recruited. A total of 630 incident cases of PCOS were enrolled after considering inclusion and exclusion criteria. Out of this, 30 patients each without (Group 1) and with vitamin D deficiency (Group 2) were selected using purposive sampling design to study the impact of vitamin D deficiency on serum AMH levels. In the intervention group, 60,000 IU, once weekly vitamin D supplementation, was done for eight weeks. After eight weeks, vitamin D and serum AMH levels were reassessed. Data was analyzed using Statistical Package for Social Sciences Version 21.0. PCOS women having vitamin D (25OHD) levels (<20 ng/ml) were given oral vitamin D3: 60,000 IU once weekly for eight weeks. The main outcome measures were change in AMH concentration after vitamin D3 supplementation. The targeted AMH concentration was <4 ng/ml.

Results: In Group 1, 23.3% women had AMH levels <4 ng/ml, whereas it was 20.0% in Group 2. The correlation between vitamin D and AMH levels was weak and not significant statistically ($r = 0.090$; $p = 0.495$). On evaluating this correlation separately in Groups 1 and 2, it was found to be weak but statistically not significant ($r = 0.129$; $p = 0.497$) in Group 1; whereas, in Group 2 it was found to be mildly positively correlated yet statistically not significant ($r = 0.344$; $p = 0.063$). Following intervention, mean vitamin D levels changed from 12.53 ± 4.32 ng/ml to 33.59 ± 8.75 ng/ml, thus showing a significant change. Vitamin D levels were normalized (>20 ng/ml) in all the women. A statistically significant change in AMH levels was observed with mean values changing from 4.88 ± 2.06 ng/ml to 3.79 ± 2.00 ng/ml. The proportion of women with normalized AMH levels (<4 ng/ml) increased from 20% to 80% following intervention. In the vitamin D deficient group, following intervention, the correlation between vitamin D and AMH levels was weak and not significant statistically.

Conclusion: Vitamin D levels have a regularizing effect on ovarian reserves among PCOS patients with vitamin D deficiency.

swati.medic@gmail.com

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