



ROLE OF VITAMIN D IN PCOS

Dr Monika

KEYWORDS :

INTRODUCTION:

PCOS is recognized as one of the most common endocrinopathies in women of reproductive age with a prevalence of 4 to 10% (1). PCOS is a heterogenous disorder associated with increased risk of insulin resistance, type 2 diabetes mellitus and metabolic syndrome; all of which have long term consequences.(2)

Vitamin D in addition to its well described role in calcium hemostasis and bone metabolism may cause a wide range of extra skeletal effects. A relatively higher prevalence of vitamin D deficiency is observed among women with PCOS (67 to 85 %), in contrast to a prevalence of 20 to 48% among the general adult population.

The joint European Society of Human Reproduction and Embryology (ESHM/ASRM) and The Rotterdam Consensus Group in 2003 provided revised criteria for diagnosis of polycystic ovary syndrome that included presence of at least two of the following three criteria:

1. Oligo- &/or anovulation
2. Clinical and/or biochemical signs of hyperandrogenism
3. Polycystic ovaries on ultrasound or direct inspection

The endocrine society clinical practice guidelines define vitamin D deficiency : 25 hydroxy vitamin D level < 20 ng/ml, vitamin D insufficiency as : 25 hydroxy vitamin D levels between 21 and 29 ng/ml and normal as: 25 hydroxy vitamin D level > 30 ng/ml.

AIMS & OBJECTIVE;

- 1.) To study prevalence of vitamin D in females with PCOD.
- 2.) To estimate serum 25 hydroxy vitamin D levels in PCOS patients.
- 3.) To assess the effect of vitamin D supplementation on vitamin D deficient PCOS patients.

METHOD AND MATERIAL:

The present study was carried out on all PCOS patients between 18-35 years of age attending the outpatient department of Kamla Nehru Memorial Hospital Prayagraj for a duration of 1 year from May 2017 to 2018.

Place Of Study: Kamla Nehru Memorial Hospital, Prayagraj

Duration Of Study: 6 month

Sample Size: 122

Study Design: Prospective observational study.

Inclusion Criteria:

- 1.) Patients with PCOS diagnosed on basis of Rotterdam criteria:
 - a.) Chronic oligo or anovulation
 - b.) Clinical or biological hyperandrogenism : Hirsutism, acne
 - c.) Polycystic ovaries on sonographic findings : > 12 follicles in either ovaries measuring 2-9 mm diameter or an increased ovarian volume > 10 mm³
- 2.) Spontaneous onset of maturation
- 3.) Normal sexual development
- 4.) Age between 18 - 35 years.

Exclusion Criteria:

Patients with any of the following were excluded from the study
Thyroid disorders
Hyperprolactinemia

Hyperlipidemia

Diabetes mellitus

Hypertension

Cushing disease,

Late onset CAH

Patients on medications such as antiepileptics, OCP, steroids.

Study Procedure :

After informed consent of the patients and approval of the medical ethical committee, detailed history and examination of each subject involved in the study was taken. Diagnosis of PCOS was made on the basis of Rotterdam criteria. Blood investigations including Serum vitamin D, testosterone levels were done for all patients.

Patients with serum vitamin D levels of less than 20 ng/ml were taken up as vitamin D (endocrine society clinical practice guidelines) deficient group and were prescribed.

Vitamin D 2000 IU daily by oral route for duration of 6 months. At the end of 6 months levels of serum vitamin D were repeated and comparison was made with pre-treatment values.

Statistical Analysis –

After 6 months of treatment each subject underwent the same procedures and tests. The data obtained was analysed SPSS version 16. The effect of treatment before and after the completion of study was analysed by using paired t test. A 'p' value < 0.05 was statistically significant.

OBSERVATION:

Out of these 122 cases (25 hydroxy Vitamin D deficient PCOS cases fulfilling inclusion and exclusion criteria) 98 patients came out to be vitamin D deficient.

Table 1: Vitamin D Deficiency In PCOS Cases

Total PCOS patients	25 hydroxy Vitamin D deficient	Normal 25 hydroxy vitamin D
122	98(80.32%)	24(19.6%)

Prevalence of vitamin D Deficiency in PCOS patients:

Table 2: Vitamin D Level in PCOS Cases

Serum 25 Hydroxy Vitamin D Levels (ng/ml)	No of cases	% of cases
< 10	7	5.73%
10-19.9	49	40.16%
20-29.9	42	34.42%
>30	42	19.67%
total	122	100%

From the total 122 patients 7 cases (5.73%) had 25 hydroxy Vitamin D levels. <10 ng/ml, 49 cases (40.16%) had levels between 10 - 19.9 ng/ml, 42 cases (34.42%) had levels between 20 29.9 ng/ml and 24 cases (19.67%) had normal 25 hydroxy vitamin D levels i.e. > 30 ng/ml

Table 3: 25(OH) Vitamin D Level (Before And After Treatment)

Vitamin D level (ng/ml)	No of cases	%	No of cases	%
<10	7	14.58	0	0
10-19.9	23	47.91	6	12.5
20-29.9	18	37.50	42	87.5
total	48	100	48	100%
mean SD	16.917.13		29.966.68	

t-13.923, p<0.0001

Before Vitamin D supplementation 7 cases (14.58 %) had 25 (OH) vitamin D levels <10 ng/ml, 23 cases (47.91%) had levels between 10-19.9 ng/ml and 18 cases (37.5%) had levels between 20- 29.9 ng/ml.

DISCUSSION:

The women of reproductive age group 18 to 35 years fulfilling 2 of 3 rotterdam criteria were selected for the present study .The cases were given vitamin D 2000 IU daily for 6 months. The effect was studied after 6 months of treatment on serum testosterone levels. In our study. we found a prevalence of 25 hydroxy vitamin D deficiency in 80.32% cases. Our results of prevalence of 25 hydroxy vitamin D deficiency were similar to the studies conducted by Wehr E et al in which this percentage was found to be 72.5%.

CONCLUSIONS:

1. The prevalence of vitamin D deficiency in PCOS cases was 80.32%.
2. 5.73% cases had vitamin D levels < 10 ng/ml, 40.16 % cases had vitamin D level between 10-19.9 ng/ml, 34.42% cases had vitamin D levels between 20-29.9 ng/ml and 19.67% had vitamin D levels > 30ng/ml.
3. after supplementation of vitamin D 2000 IU per day in pcos deficient cases , the level of serum 25(OH) vitamin D level increased significantly.

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