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PREECLAMPSIA PREGNANT WOMEN WITH VITAMIN D3 LEVELS **DURING THE THIRD TRIMESTER**

Nagalakshmi¹ & Janakiramudu^{2*}

¹Assistant Professor, PSP Medical college and hospitals , Chennai, Tamilnadu, India. ²Assistant Professor, Sri Lakshmunarayana institute of medical sciences Puducherry, India.

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ABSTRACT

Background: The condition of preeclampsia (PE) occurs after 140 days of gestation and causes elevated blood pressure and proteinuria. One explanation for the cause of Preeclampsia is a lack of vitamin D3 during gestation. It is crucial to receive adequate vitamin D3 throughout gestation because low levels of vitamin D3 may be linked to problems including lower birth weight and associated diseases in mothers. Objectives: This study aims to determine how the severity of Preeclampsia could affect serum vitamin D3 levels during pregnancy's third trimester.Methods:81(3rd -trimester) pregnant women participated in this case-control study (46 with preeclampsia and 35 non-PE mothers as controls). Serum vitamin D3 was measured by ELISA. Results: According to the research, serum vitamin D3 levels were not significantly different among controls (13.43 ±1.31ng/ml) and preeclampsic patients. Group analysis also showed no significant differences between moderate preeclampsia cases and severe PE cases (14.07 \pm 1.08 ng/ml). Conclusions: Pregnant women's serum vitamin-D3 levels may not be affected significantly by preeclampsia and its severity during the 3rd trimester.

INTRODUCTION

Approximately 3-9% of pregnancies are complicated by preeclampsia (PE), which has devastating effects on mothers and babies. In women without preexisting hypertension, renal impairment, thrombocytopenia, hepatic dysfunction, pulmonary edoema, or cerebral abnormalities, this syndrome is typically identified by elevated blood pressure and proteinuria after 140 days of pregnancy. The concept of PE differs from country to country. PE is characterised by recently developed hypertension and proteinuria.Early-onset and late-onset preeclampsia can be distinguished from each other. A syndrome can be classified according to its onset period or according to its identification. More than 70 percent of preeclamptic cases are of late onset. A woman with early onset display symptoms prior to week 33, while a woman with late onset display symptoms after week 34.

Corresponding Author Janakiramudu

Perinatal mortality and morbidity are higher in women who develop PE at an early age. Past preeclamptic, chronic renal impairment, chronic hypertension, systemic lupus erythematosus, initial conception, maternal-age >36 years, BMI >36 kg/m2, interpregnancy interval >11 years, and family background of PE are major risk factor.

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Vitamin D3 was found to be a key player in bone homeostasis throughout the first decades of the 20th century by identifying and controlling rickets. Vitamin D's immunomodulatory, anti-inflammatory, anti-fibrotic, and antioxidant characteristics were discovered as a result, and vitamin-D2 (ergocalciferol) and vitamin D3 (cholecalciferol) were separated and named. A sufficient content of vitamin-D3 is necessary for the regulation of insulin production, insulin action, and vascular health. Its shortage causes its metabolism to be drastically altered during gestation for unclear reasons. When determining a person's vitamin D3 amounts, also referred as bioactive vitamin D3, 1,25-dihydroxyvitamin-D3, 1,25-(OH)2D3, calcitriol, or 1,25-hydroxycholecalciferol, the serum total 25-hydroxyvitamin D (25(OH)D) is frequently utilised. In order to assess the prevalence of vitamin D3 deficits and



comprehend both the maternal and foetal outcomes connected to such deficiencies, researchers have employed estimates of vitamin D3 levels in the serum of pregnant females. Because vitamin D3 is essential for foetal growth during pregnancy, the fetus's development depends greatly on the mother's vitamin D3 levels. The foetus continues to create more 1,25-(OH)2D3 than is necessary at the moment of delivery. Few investigations in the 3rd trimester of pregnancy have focused on pregnant women with PE and those who have low vitamin D3 levels. This communication intends to analyse vitamin D3 amounts in pregnant women with PE throughout their third trimester.

MATERIALS AND METHODS:

The analysis style and the participants are as follows:

From May 2020 to April 2021, Sri Lakshmunarayana institute of medical sciences Puducherry, India, conducted this case-control study at its Department of science and Biochemistry. 81 pregnant women who were enrolled in Chennai City altogether participated in the research (46 with PE and 35 without PE as controls). Participants in this study had clinical examination, blood pressure checks, and laboratory evaluations from their doctors.

The following criteria must be met in order to be included:

This study included only pregnant mother in their 3^{rd} trimester. In this research, researchers investigated 18-46-year-old singleton pregnant mothers between ≥ 23 and 40 weeks. Individuals having arterial hypertension,

characterized by systolic blood pressure 140 mmHg or diastolic bp > 90 mmHg, proteinuria 0.3 grams/24 hours or 3 grams/L, and widespread edoema.

Analysis of biochemical data:

In a sitting position, disposable syringes were used to withdraw 5ml of venous blood from every pregnant mothers. A disposable test tube without anticoagulant was then filled with the solution and allowed to clot slowly for 10 to 20 minutes at 37°C. Serum samples were expanded at 1000xg for 10-20 mins and frozen at -80°C to assay vitamin D3. After being thawed twice, the samples were evaluated using ELISA kits to detect vitamin D3 levels.

Study of statistical data:

The t-test was performed to analyse the evidence in light of the findings of the normality test. SPSS software version v was used to calculate and evaluate the average \pm standard error mean (mSEM). At p 0.05, the findings considered deemed statistically relevant.

RESULTS

Tables 1 and 2 compares preeclamptic pregnant mothers and healthy controls by age and vitamin-D3 levels.T-test revealed no significant differences (p= 0.958) among serum vitamin D3 levels of control women and patients (15.33ng/ml). Moderate (14.921ng/ml) and chronic (14.071ng/ml) Preeclampsia individuals showed non-significant (p=0.1154) vitamin D reductions.

severe PE and control subjects. 25(OH)D insufficiency and

not affect vitamin-D levels in pregnant mother during their

3rd trimester. In addition, neither mild nor severe level PE

patients showed a significant difference in their vitamin D

According to the results of this research, PE may

preeclampsia intensity were not linked.

CONCLUSION

concentrations.

Table 1: Study Participants	' ages and vitamin D3 concentrations
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	Control (n=35)	Preeclampsia (n=46)	P-value
Age in years	29.8±1.38	29±0.96	0.697
The Vitamin D3 level (ng/ml)	14.41±1.31	15.32±1.01	0.958

Table 2 shows PE patients' ages and vitamin D3 concentrations

	Mild Preeclampsia (n=20)	Severe Preeclampsia (n=26)	P-value
Age in years	27.45±1.62	30.31±1.16	0.145
The Vitamin-D3 level (ng/ml)	14.93±1.70	14.08±1.08	0.154

DISCUSSION

Latest evidence shows no significant difference in mother age (p> 0.06) among control and treatment groups (moderate and chronic Preeclampsia). Moderate & intense PE groups did not differ (p>0.06). Preeclamptic pregnant women had similar vitamin D3 levels as normal controls. Inadequate exposure to sun rays, poor vitamin D3 consumption, and seasonal fluctuations all may cause vitamin D3 insufficiency in all study participants.

This study confirms prior research demonstrating no variation in serum-25(OH)D levels amongst moderate and

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