

Incidence of Hypocalcemia in Women of Child Bearing Age

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ABSTRACT

Aim: To evaluate the incidence of hypocalcemia among women during childbearing age.

Study Design: Observational cross-sectional study

Place and duration of study: Outpatient Department and Medical Wards, Chandka Medical College Hospital Larkana from 1st July 2018 to 30th June 2019.

Methods: A total of 90 pregnant women were recruited for this study. All the non-pregnant women, chronic diseases and comorbidities were excluded whereas pregnant women aged 18-40 with gestational age of above 26 weeks attending the OPD and wards were included.

Results: The mean age of the women was 28±7.80 with range 18-40. Seventy percent of the women were in the age category of 21 to 35. The mean calcium level was 85±9.2 mg/l. The average glucose level was 1.2±0.43. Similarly urea level was 0.22±0.07 g/l. 70% of the all the births during the study, the deliveries were vaginal whereas the caesarean section was 30%.

Conclusion: High incidence of mild hypocalcemia among childbearing women was found.

Keywords: Hypocalcemia, Childbearing age, Pregnant woman, Incidence

INTRODUCTION

Along with Vitamin D, Calcium is an important nutrient for human life and body. The vitamin D deficiency leads to reduce the calcium absorption in intestine¹. The same way less intake of calcium leads to catabolism of Vitamin D. Malnutrition especially less intake of calcium during childbearing age resulted an adverse effect on mother as well as the fetus². The intake of 200 mg calcium per day are essential during childbearing age. This quantity is importantly required for secretion to breast milk and progression during babyhood³. For skeletal mineralization the calcium provided by mother via placenta during fetal life and during babyhood via breast milk^{4,5}.

Total serum calcium normally falls throughout pregnancy, thus a healthy and balanced maternal diet is crucial since the diet needs to take care of the women's usual nutritional needs as well as the needs of the growing fetus, enabling the mother to maintain her stores of nutrients and those required for fetal health as well as for the future breastfeeding period⁶. Many physiologic changes occur during pregnancy resulting in an increase of red blood cells and plasma volume and a reduction of micronutrients and circulating nutrient-binding proteins. In most developing countries, poor nutrition combined with the usual physiologic pregnancy changes can lead to micronutrient deficiency states like calcium deficiency^{7,8} which can have detrimental effects on bone health since the bone stores most of the body's calcium and replaces extracellular fluid losses.

Clinically the hypocalcemia is frequently observed in childbearing women. Its prevalence varies with gestational age; moreover it is contrarily linked to the age of pregnancy and weight of the neonate. There are very less evidences of studies related to the hypocalcemia during

childbearing age in the region. That why we plan and conducted the study. The main of the study was to evaluate the incidence of hypocalcemia among women during childbearing age.

MATERIALS AND METHODS

This observational cross-sectional study was conducted at Outpatient Department and Medical Wards, Chandka Medical College Hospital Larkana from 1st July 2018 to 30th June 2019. The study exclusion criteria includes all the non pregnant women, women with chronic diseases and comorbidities whereas all the pregnant women aged 18-40 with gestational age of above 26 weeks attending the OPD and wards were included in this study. Demographics information along with obstetric history of all the participants was collected via a standard face-to-face interview. Other socioeconomic status, dietary habits, life style etc was also noted. All the required diagnostic values were assessed from the blood samples taken in hospital laboratory. All the collected data was stored electronically and analyzed later by using SPSS version 20. Over all a P values less than 0.05 was considered statistically significant.

RESULTS

The mean age of the women was 28±7.80 with range 18-40. 70% of the women were in the age category of 21 to 35. Thirty six (40%) patients had gestational age <30 weeks and 60% had gestational age >30 weeks. Sixty (66.67%) patients had rural residence while 30 (33.33%) had urban residence. According to the co-morbidities 45 (50%) patients had hypertension, 19 (21.1%) women were anaemic, 11 (12.2%) patients had gestational diabetes, 10 (11.11) patients had obesity and 6 (6.67%) patients had family history of hypocalcemia (Table 1). The mean serum calcium level was 8.01±0.22 mg/dl (Ranges 7.25 to 9.4 mg/dl). According to the calcium level we found that 85

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(94.4%) women had mild calcium deficiency, 5 (5.6%) had moderate and no patient with severe calcium deficiency (Table 2).

Table 1: Baseline characteristics of all the patients (n=90)

Variable	No.	%
Age (Years)	28±7.80	
Gestational age (weeks)		
< 30	36	40.0
> 30	54	60.0
Residence		
Rural	60	66.67
Urban	30	33.33
Co-morbidities		
Hypertension	45	50
Anemia	19	21.1
Gestational diabetes	11	12.2
Obesity	10	11.11
Family history	6	6.67

Table 2: Distribution of hypocalcaemia among childbearing women

Hypocalcaemia	No.	%
Severe calcium deficient	-	-
Moderate	5	5.6
Mild	85	94.4

DISCUSSION

Calcium deficiency in pregnant women may lead to severe complications. Many of studies illustrated high rates of calcium deficiency in pregnant women with high complications rate.⁸ The present study was conducted to examine the incidence of hypocalcemia in women with child bearing age. In this study the mean age of patients was 28±7.80 years. The mean age of the women was 28±7.80 with range 18-40. 70% of the women were in the age category of 21 to 35. 36(40%) patients had gestational age <30 weeks and 60% had gestational age >30 weeks. 60(66.67%) patients had rural residence while 30 (33.33%) had urban residence. According to the co-morbidities 45 (50%) patients had hypertension, 19 (21.1%) women were anaemic, 11(12.2%) patients had gestational diabetes, 10(11.11) patients had obesity and 6 (6.67%) patients had family history of hypocalcemia These results were comparable to many of previous studies.⁹⁻¹⁰ We observe the high incidence of mild hypocalcaemia among women. The high incidence may be due to the reason that through last trimester, the calcium vigorously relocated from mother to the fetus. The evidence behind is the presence of high total calcium concentration in cord blood than to maternal serum.¹¹ This is directly related to the diet of the mother, that's why they have been advised to use calcium rich food during pregnancy. Calcium deficiency or hypocalcaemia may also be due to inadequate absorption of calcium.¹² The present study showed that the calcium intake is very low to the recommended intake almost less than half¹³⁻¹⁵

The reason behind may be the less usage or consumption of dairy products. This finding was similar to Taipei¹⁶ and China & Vietnam.¹⁷ The less absorption of calcium can also be due to low level of serum 25(OH)D as vitamin D helps the intestinal fascination of calcium by upholding active calcium transference across the intestine, which resembles to 90% of calcium immersion¹⁸ We have observed less 25(OH)D concentration in our study in many pregnant women. It is well documented that the role is important for 25(OH)D in calcium absorption¹⁸ A comparative study of pregnant to non pregnant women in rural verses urban region in Vietnam indicated higher level of 25(OH)D¹⁹⁻²⁰.

In our study the population is mixed so we observed the similar difference. The hypocalcaemia stimulate the parathyroid glands to produce more quantity of PTH whereas the production suppresses with high concentration of calcium and magnesium. PTH plays vital role in calcium metabolism. There are very less studies related to the hypocalcaemia in the region, that's why we initiated the important issue that requires more privilege and attention for future.

CONCLUSION

There is high incidence of mild hypocalcemia among women with childbearing age in the region.

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