ejpmr, 2021,8(4), 509-511

SJIF Impact Factor 6.222

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

TO STUDY THE ASSOCIATION OF SERUM CALCIUM LEVEL IN EARLY PREGNANCY LOSS IN PATIENTS ATTENDING OBSTETRICS AND GYNAECOLOGY DEPARTMENT AT SMS MEDICAL COLLEGE, JAIPUR

[1]Dr. Varsha Sankhala, *[2]Dr. Mohan Lal Meena, [3]Dr. Leela, [4]Dr. Pawan Kumar and [5]Dr. Priyanka Meena

[1]Resident Doctor, Department of Obstetrics & Gynaecology, SMS Medical College & attached group of Hospitals, Jaipur, Rajasthan.
[2]Senior Professor, Department of Obstetrics & Gynaecology, SMS Medical College & attached group of Hospitals, Jaipur, Rajasthan.
[3]Resident Doctor, Department of Obstetrics & Gynaecology, SMS Medical College & attached group of Hospitals, Jaipur, Rajasthan.
[4]MS, General Surgery, SN Medical College, Jodhpur, Rajasthan.
[5]Senior Demonstrator, Department of Biochemistry, SMS Medical College, Jaipur, Rajasthan.

***Corresponding Author: Dr. Mohan Lal Meena**

Senior Professor, Department of Obstetrics & Gynaecology, SMS Medical College & attached group of Hospitals, Jaipur, Rajasthan.

Article Received on 06/02/2021 **Article Revised on 26/02/2021** **Article Accepted on 16/03/2021**

ABSTRACT

Background-The present study was planned to find out the association of serum calcium levels in normal pregnancy and early pregnancy loss in the first trimester. **Methods-**The present study was a hospital based comparative study conducted in 40 pregnant (7-9 weeks) women having pregnancy loss (Group I) and 40 pregnant (7-9 weeks) women having normal pregnancy coming to department of Obstetrics and Gynaecology, SMS medical college and associated hospitals, Jaipur, Rajasthan. **Results-**The meanserum Calcium level in pregnancy loss cases was 9.19±0.45 mg/dl and in normal pregnancy group was 9.48±0.29 mg/dl. So the results showed that the mean serum Calcium was significantly higher in normal pregnancy group compare to early pregnancy loss cases.The mean PTH level in pregnancy loss cases was 25.35±7.42 pg/dl and in normal pregnancy group was 29.53±5.59 pg/dl. So mean PTH was also significantly higher in normal pregnancy group compare to early pregnancy loss cases. **Conclusion-**We concluded that serum calcium level was significantly lower in early pregnancy loss.

KEYWORDS- Calcium, Early pregnancy loss, Fetus.

INTRODUCTION

Miscarriage is defined as the spontaneous loss of pregnancy before the fetus reaches viability. The term therefore includes all pregnancy losses from the time of conception until 24 weeks of gestation.[1]

Pregnancy loss has an important emotional impact on women and their partners. Feelings of guilt, shame, isolation, and sometimes anger are common. These feelings can intensify with repeated losses and can affect the marital relationship.[2] Being able to listen with understanding and empathy and to recognize pregnancy loss as an adverse life event is essential in managing these situations.[3]

Calcium levels affect many extracellular and intracellular processes. These include neural transmission, membrane stability, bone structure, blood coagulation, muscle movement, and intracellular signaling. It is also an important cofactor for hormonal secretion in endocrine organs. For optimal and normal functioning of these processes, the total serum calcium concentrations need to be normally maintained within the very narrow range of 8.5 and 10.5 mg/dL (2.12 to 2.62 mmol/L).[4] Hypocalcemia, a common metabolic derangement observed in hospitalized patients (both medical and surgical), is caused by loss of calcium from circulation or insufficient entry of calcium into the circulation.

Calcium is the substrate for bone mineralization. Skeletal mass cannot be built or maintained if calcium intake is insufficient or calcium losses are excessive. In humans, more than 99% of calcium is stored as hydroxyapatite in bones and the rest (5–6 g) is in the intracellular and extracellular compartments, with only 1.3 g located extracellularly. Half of plasma calcium is in a free or ionized state, and only this ionized calcium is metabolically active and affects the body's functions. Of the remaining plasma calcium, 40% is transported partly bound to plasma proteins (90% of this is bound to albumin), and the rest is bound to small anions such as phosphate, carbonate, citrate, lactate, and sulfate.[5]

Therefore, present study was planned to find out the association of serum calcium levels in normal pregnancy and early pregnancy loss in the first trimester.

MATERIALS AND METHOD

TYPE OF STUDY

The study was a hospital based comparative study.

STUDY DESIGN

Cross sectional study

STUDY AREA

The study was carried out in Department of Obstetrics and Gynaecology, SMS medical college and associated hospitals, Jaipur, Rajasthan.

STUDY PERIOD

The study was carried out from June 2019 to August 2020.

STUDY POPULATION

Pregnant Women carrying singleton fetus at 7–9-week of gestation by first day of the last menstrual period or as gestational age found by the ultrasound scan were included in study population.

SAMPLING PROCEDURE

40 pregnant women having pregnancy loss at 7-9 weeks of gestation and 40 pregnant women at 7-9 weeks of gestation having normal pregnancy were included consecutively after beginning the study.

INCLUSION CRITERIA

A primigravida with singleton pregnancy of 7-9 weeks of gestation (period of gestation calculated by last menstrual period or as gestational age found by the ultrasound scan) having spontaneous conception with pregnancy loss (Case) and normal pregnancy (control) and willing to participate, were included in the study.

EXCLUSION CRITERIA

Women diagnosed with

1. Thyroid dysfunction
2. Autoimmune disorders
3. Uterine anomalies
4. Medical disorders of pregnancy
5. Multifetal gestation

METHODOOGY

After obtaining approval from institutional ethical committee all eligible pregnant women fulfilling inclusion criteria were explained about the nature and purpose of the study.

After taking their informed written consent, patients were enrolled in the study and their detail history, general and systemic examination was done.

Blood samples from women was collected after fasting state of 8 hours in plain labelled vials at 7–9 weeks of gestational age and send to institutional laboratory for evaluation. Samples were centrifuged for 10 min at 3000 r.p.m. at room temperature. Quantification of serum calcium was performed using commercial kits. Reports were collected with name and details mentioned on it.

All information and reports were recorded on a pre designed Performa and were entered in Microsoft excel sheet to prepare master chart.

STATISTICAL ANALYSIS

The collected data were transformed into variables, coded and entered in Microsoft Excel. Data were analyzed and statistically evaluated using SPSS-PC-21 version.

Quantitative data was expressed in mean, standard deviation and difference between two comparable groups were tested by student's t-test (unpaired) or Mann Whitney 'U' test. Qualitative data were expressed in percentage. Statistical differences between the proportions were tested by chi square test or Fisher's exact test. 'P' value less than 0.05 was considered statistically significant.

RESULTS

The present study was a hospital based comparative study conducted in 40 pregnant (7-9 weeks) women having pregnancy loss (Group I) and 40 pregnant (7-9 weeks) women having normal pregnancy coming to department of Obstetrics and Gynaecology, SMS medical college and associated hospitals, Jaipur, Rajasthan. The observations and results of the study are presented as below.

Table 1: Mean age comparison between both groups.

	Group I (n=40)	Group II (n=40)	P
	Mean±SD	Mean±SD	value
Mean age in years	22.08±2.65	21.95±2.35	0.82
Rural : Urban	11:29	14:26	0.46
Hindu : Muslim	29 :11	32:8	0.44
BMI (Kg/m^2)	20.14±1.54	21.02±2.16	0.04

Mean age of group I was 22.08±2.65years while mean age of group II was 21.95±2.35 years. No significant different was observed between both groups in term of age comparison.. Out of 40 subjects in Group I, 11 (27.5%) subjects belong to rural area and 29 (72.5%) were from urban.Similarly, out of 40 subjects in Group II, 14 (35.0%) and 26 (65.0%) belonged to rural and urban area respectively.BMI of group I was 20.14±1.54

and mean BMI of group II was 21.02±2.16, which was significantly higher than group I.

Table 2: Serum calcium, phosphorus and PTH parameter comparison between both groups.

	Group I (n=40) Mean±SD	Group II (n=40) Mean±SD	P value
Serum Calcium (mg/dl)	9.19±0.45	9.48±0.29	<0.01
Serum Phosphorus (mg/dl)	3.56±0.36	3.53±0.32	0.50
PTH level (pg/dl)	25.35±7.42	29.53±5.59	<0.01

The above table shows the comparison of mean serum calcium, serum phosphorus and serum PTH level between pregnancy loss cases and normal pregnancy cases. The meanserum Calcium level in pregnancy loss cases was 9.19±0.45 mg/dl and in normal pregnancy group was 9.48±0.29 mg/dl. So the results showed that the mean serum Calcium was significantly higher in normal pregnancy group compare to early pregnancy loss cases.

The mean PTH level in pregnancy loss cases was 25.35±7.42 pg/dl and in normal pregnancy group was 29.53±5.59 pg/dl. So mean PTH was also significantly higher in normal pregnancy group compare to early pregnancy loss cases.

DISCUSSION

the comparison of mean serum calcium, phosphorus and PTH level between pregnancy loss cases and normal pregnancy cases. The mean serum Calcium level in pregnancy loss cases was 9.19±0.45 mg/dl and in normal pregnancy group was 9.48±0.29 mg/dl. So the results showed that the mean serum Calcium was significantly higher in normal pregnancy group compare to early pregnancy loss cases. The mean PTH level in pregnancy loss cases was 25.35±7.42 pg/dl and in normal pregnancy group was 29.53±5.59 pg/dl. So mean PTH was also significantly higher in normal pregnancy group compare to early pregnancy loss cases.

Finding of our study were also in concordance with the study by Lebriz HA et al[6]in which the calcium levels were significantly lower in pregnancy loss group than normal pregnancy and non-gravid groups (p=0.005, p=0.033 respectively). In study by Hou W et al[7], the mean levels of calcium, phosphorus and PTH were 1.56 ± 0.17 mmol/l, 1.02 ± 0.15 mmol/l and 227.36 ± 86.78 pg/ml, respectively in the pregnancy loss group, whereas they were 1.69 ± 0.17 mmol/l, 1.04 ± 0.22 mmol/l and 290.54 ± 157.60 pg/ml, respectively, in the normal pregnancy group which is similar to our study.

CONCLUSION

We concluded that serum calcium level was significantly lower in early pregnancy loss.

REFERENCES

1. Royal College Obstetricians and Gynaecologists (RCOG). Recurrent Miscarriage, Investigation and Treatment of Couples (Green-top Guideline No. 17), 2011. Available at :https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg17/#:~:text=Miscarriage%20is%20defined%20as%20the,until%2024%20weeks%20of%20gestation.
2. Ross AC, Taylor CL, Yaktine AL, Valle HB, eds. Institute of Medicine (US) Committee to Review Dietary Reference Intakes for Vitamin D and Calcium; Dietary reference intakes for calcium and vitamin D. Washington (DC): National Academies Press US, 2011.
3. Pu F, Chen N, Xue S. Calcium intake, calcium homeostasis and health. *Food Science and Human Wellness*, 2016; 5(1): 8-16. 10.1016/j.fshw.2016.01.
4. Jafri L, Khan AH, Azeem S. Ionized calcium measurement in serum and plasma by ion selective electrodes: comparison of measured and calculated parameters. *Indian J ClinBiochem*, 2014; 29(3): 327-332. . 10.1007/s12291-013-0360-x
5. Fong J, Khan A. Hypocalcemia: updates in diagnosis and management for primary care. *Can Fam Physician*, 2012; 58(2): 158-162.
6. Lebriz HA, Yeliz A, Oktay O. Is There an Association Between Early PregnancyLosses and Low 25-Hydroxy Vitamin D Levels?. POJ GynObst Res, 2017; 1(1): 1-5.
7. Hou W, Yan XT, Bai CM, Zhang XW, Hui LY, Yu XW. Decreased serum vitamin D levels in early spontaneous pregnancy loss. Eur J ClinNutr, 2016; 70(9): 1004-8.