



“COMPARATIVE STUDY OF CALCIUM LEVEL IN PREECLEMPTIC AND NORMAL PREGNANT TRIBAL & NON-TRIBAL WOMEN IN JHARKHAND”

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ABSTRACT **Introduction-** Pregnancy is a physiological stress in which many biochemical changes occur in the body. Preeclampsia, the complication of pregnancy, refers to a syndrome of new onset of hypertension proteinuria after 20 weeks of gestation in previously normotensive women, is due to rise in blood pressure, which is related with calcium change in blood. Recent study, implicated alterations in calcium metabolism in the pathogenesis of hypertension in pregnancy. **Material & Method-** Serum calcium level of 75 normal pregnant and 75 preeclampsic Tribal & non-tribal women at 2nd & 3rd trimesters were estimated by using Arsenazo 3 method, one of the most standard method used for estimation of serum calcium based on colorimetric principle and compared. **Observation & Result-** The Mean serum calcium level in cases of normal pregnant women in Jharkhand $9.65 \pm 0.58 \text{ mg/dl}$ while mean total serum calcium level of pre-eclampsic was 6.97 mg/dl is lesser in comparison to normal pregnancy. **Conclusion-** There is significant decrease in total serum calcium level in preeclampsic as compare to normal pregnant women in Jharkhand.

KEYWORDS : Pre-eclampsia, Calcium level, Tribal & Non-Tribal women

INTRODUCTION

Pre-eclampsia, the complication of pregnancy, refers to a syndrome of new onset of hypertension proteinuria after 20 weeks of gestation in previously normotensive women. Pre-eclampsia further subdivided into mild, moderate and severe pre-eclampsia on the basis of blood pressure. (1)Mild pre-eclampsia: patient having systolic blood pressure between 140-160 mm of Hg, diastolic blood pressure between 90 - 110 mm of Hg and proteinuria up to 1+ (dipstick method). (2)Moderate pre-eclampsia- BP range, 140 - 160/90-110 mm of Hg (i.e. Systolic above 140 but below 160 mm of Hg & Diastolic >90 but <110 mm of Hg (3)Severe pre-eclampsia: patient having systolic blood pressure between >160 mm of Hg, diastolic blood pressure >110 mm of Hg plus one or more of the following criteria; proteinuria >1+, headache, visual disturbance, upper abdominal pain, oliguria (<400 ml/24 hours), serum creatinine elevated >1.2 mg/dl, marked elevation of serum transaminase AST or ALT, fetal growth restriction and pulmonary edema.

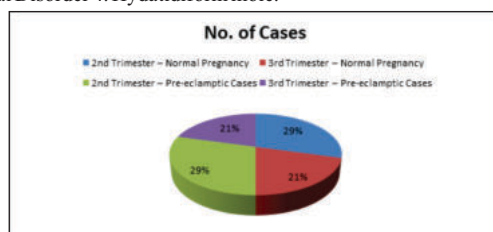
Pregnancy is a physiological stress in which many biochemical changes occur in the body. Pre-eclampsia is due to rise in blood pressure, which is related with calcium change in blood. Recent study, reflect changes in calcium metabolism in pathogenesis of hypertension in pregnancy. In the third trimester, calcium is deposited in the fetal skeleton at the rate of 200mg/dl. In addition, urinary excretion of calcium in the third trimester is doubled. Hence Calcium deficiencies have been linked to pre-eclampsia / eclampsia. Many factors causes the pathogenesis of pre-eclampsia and it is likely that the contributions of these factors to the development of pre-eclampsia may vary according to the different population characteristics and geographical locations. On the other hand serum calcium levels in a given population can be influenced by diet, exposure to sunlight and bone mass density among other factors. Thus the need to determine the calcium level in different parts of world is important. So the study was focused on the correlation of pre-eclampsia with variation of serum Ca in comparison to Normal pregnancy. This is the biochemical parameter that gives the highest yield for the diagnosis of pre-eclampsia. Serum free calcium normally decreases in pregnancy. Calcium deficiency leads to neuromuscular irritability, tetany, bleeding diathesis, rickets and osteomalacia. It is responsible for bone and teeth formation. The relation between the serum calcium and pregnancy problems associated with it is not a recent one. Calcium deficiency was thought to be a causative factor of other obstetrical problem like uterine inertia, toxemia of pregnancy, contracted pelvic and post partum haemorrhage also.

Material & Method

Serum calcium level of 75 normal pregnant and 75 preeclampsic Tribal & non-tribal women at 2nd & 3rd trimesters were estimated by using Arsenazo 3 method, one of the most standard method used for estimation of serum calcium based on colorimetric principle and compared. Calcium present in the serum reacts with Arsenazo 3 reagent

under neutral condition to form a purple color complex which has maximum absorbance at 650nm. The intensity of color formed is directly proportional to the calcium concentration in the sample. The study was conducted in the Department of Physiology, Rajendra Medical College, Ranchi during October, 2019 - September, 2020 after approval of Institutional ethical committee RIMS Ranchi.

The cases studied were selected from Rajendra Institute of Medical Sciences Ranchi Outdoor, Indoor and Emergency of Obstetrics and Gynecology Department after informed consent. Preeclampsia was categorized on the basis of blood pressure based on classification according to the scheme of the working group of NHBPEP (National high blood pressure education Program) 2000. This study includes pregnant Tribal and non Tribal women of Jharkhand with sign and symptoms of preeclampsia in 2nd and 3rd trimester & BP >140/90 mm Hg after 20 weeks of gestation. **Exclusion criteria:** Pregnant women with known 1. History of Essential Hypertension 2. Liver disease 3. Renal Disorder 4. Hydatidiform mole.



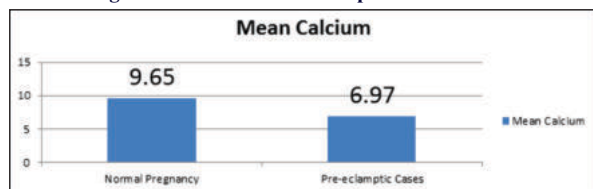
Observation & Result

The observation of the present study showed total serum calcium level in cases of normal pregnant Tribal and non Tribal women of Jharkhand was $9.65 \pm 0.58 \text{ mg/dl}$. The mean total serum calcium level of Tribal and non Tribal pre-eclampsic women of Jharkhand was 6.97 mg/dl with S.D. of 6.8 and is lesser in comparison to normal pregnancy. Decrease in total serum calcium level was significant with P value less than 0.0001 when analyzed statistically in SPSS software in both normal pregnant Tribal and non Tribal women of Jharkhand and in pre-eclampsic Tribal and non Tribal women of Jharkhand.

Table- Showing Relation Of Serum Calcium Level Of Normal Pregnant Woman And Pre-eclampsic Cases In mg%.

Sl. No	Types of Cases	No. of Cases	Mean	SD	P Value
1.	2 nd Trimester - Normal Pregnancy	44	9.65	0.58	0.0001
2.	3 rd Trimester - Normal Pregnancy	31			
3.	2 nd Trimester - Pre-eclampsic	44	6.97	0.68	
4.	3 rd Trimester - Pre-eclampsic	31			

Table - Showing Comparison Of Mean Serum Calcium Levels Of Normal Pregnant Women And Pre-eclamptic Women Of Jharkhand.



In this table among 75 control 44 of 2nd trimester and 31 of 3rd trimester. And mean and SD are 9.65 ± 0.58 in normal pregnancy and among 75 cases 44 of 2nd trimester and 31 of 3rd trimester and mean and SD 6.97 ± 0.68 in pre-eclamptic cases. As P value is less than 0.05 so there is significant relation of serum calcium level with normal pregnancy and pre-eclampsia.

CONCLUSION

There is significant relationship of total serum calcium level with pre-eclampsia. It is not known whether hypocalcaemia is the cause or the effect of pre-eclampsia, but there is definite decrease in total serum calcium level in pre-eclampsia.

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