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A STUDY OF SERUM CALCIUM AND MAGNESIUM LEVEL IN NORMAL PREGNANT WOMEN OF MANIPUR

Physiology

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ABSTRACT

Objective: To evaluate the serum calcium and magnesium level in different trimesters in Manipuri pregnant women. **Materials and Method:** 20 each of normal Manipuri pregnant women in 1st, 2nd and 3rd trimesters attending antenatal OPD in RIMS Hospital, Manipur were studied. Serum calcium and magnesium level were estimated using O-cresolphthalein-complexone and calmagite method respectively. **Results and Observation:** The mean serum calcium level were 9.10±0.57mg/dl, 9.23±0.68mg/dl, 9.20±0.67mg/dl in the 1st, 2nd and 3rd trimesters respectively (p=0.799). The mean serum magnesium level were 2.15±0.31mEq/L, 2.17±0.35mEq/L and 1.97±0.31mEq/L in the 1st, 2nd trimesters and 3rd trimester respectively (p=0.114). Both serum calcium and magnesium levels were within normal limits. **Summary:** The above study showed that there is a minimal change in the serum calcium level in the different trimesters but there was a fall in the serum magnesium level in the third trimester. However, both the findings were not statistically significant.

KEYWORDS

Calcium, Magnesium, trimester, O-cresolphthalein-complexone, Calmagite

INTRODUCTION

Pregnancy is an altered physiological condition. It involves progressive anatomical and physiological changes not only confined to the genital organs but also to all systems of the body. This is principally a phenomenon of maternal adaptation to the increasing demands of the growing foetus.[1]

The foetal calcium demand is more in the third trimester of pregnancy when the foetal skeletal undergoes mineralization and its level decreases due to plasma volume expansion in pregnancy. These may cause some alteration in serum calcium level.[2] magnesium on the other hand is required for formation of new tissue in mother and foetus.[3] Hence, serum magnesium may also be altered during normal pregnancy.

Normal growth and development of foetus must be associated with maintenance of water and electrolyte balance. Many workers have reported different levels of serum calcium and serum magnesium in the different trimesters in normal pregnancy. The present study was done to evaluate the serum levels of these ions in the normal pregnant women of the region. Moreover, estimation of serum calcium and magnesium is a very useful index for the study of certain physiological and pathological processes in pregnancy.[4]

Aims and Objects

To evaluate the serum calcium and magnesium level in different trimesters in pregnant women of Manipur.

MATERIALS AND METHOD

It was a cross sectional study conducted in the Department of Physiology in collaboration with Department of Obstetrics and Gynaecology and Department of Biochemistry, Regional institute of Medical Sciences, Imphal, Manipur. 20 each of normal Manipuri pregnant women were enrolled and grouped as 1st, 2nd and 3rd trimesters. Informed consents were taken from all the subjects. Fasting blood samples were collected and kept for 30minutes at room temperature. Then the blood samples were centrifuged as 3000rpm for 30minutes to obtain serum. Serum calcium and magnesium level were estimated by using photocolorimetric o-cresolphthalein-complexone and calmagite method respectively.[5] Both kits were manufactured by Crest Biosystem, Goa, India.

Statistical Analysis

All data were analysed by using Graphpad Instat version 3.10 software. The mean and standard deviation was calculated and p-value≤0.05 was taken as significant.

RESULTS

Table: Mean±SD of Serum Calcium and Magnesium Level

	Sample Size	First trimester	Second trimester	Third trimester	p-value
Serum Calcium (mg/dl)	20	9.10±0.57	9.23±0.68	9.20±0.67	0.799
Serum Magnesium (mEq/L)	20	2.15±0.31	2.17±0.35	1.97±0.31	0.114

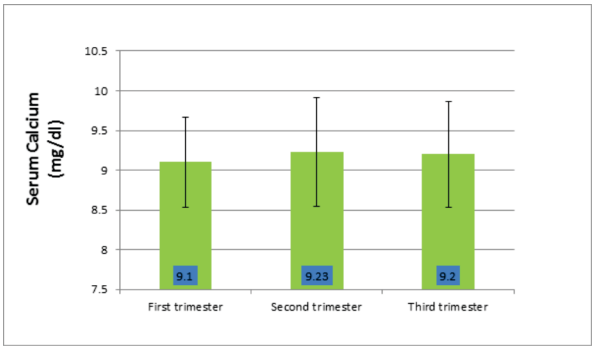

Fig 1. Mean Serum Calcium Level

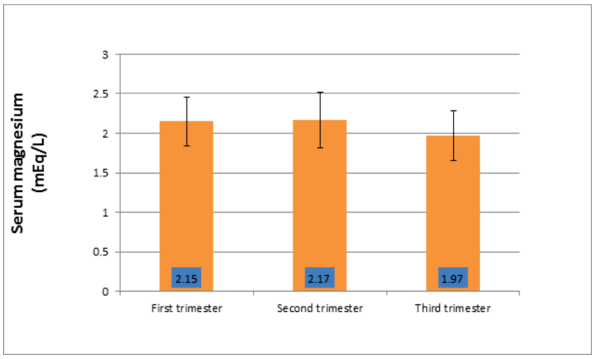

Fig 2. Mean Serum Magnesium Level

DISCUSSION

In the present study serum calcium level was found to remain almost constant in all the trimesters but serum magnesium level decreased in the third trimester. However the findings were statistically insignificant.

Moghaddam TF et al[6] also reported that serum calcium levels were constant during the three trimesters. Foetal calcium demand increased during pregnancy but the maternal serum calcium concentration remains constant probably due to increased Vitamin D-mediated intestinal absorption. However, Sultana MS et al[7] showed that serum calcium level was lower in the third trimester.

The decreased magnesium level in the third trimester in the present study was also reported by Celli A[8] and bogert LJ et al[9]. This can be explained by the fact that formation of new tissues (maternal and foetal) requires magnesium. Therefore, magnesium level is decreased in the late preganacy. But Rachay M et al[10] showed an increased in serum magnesium level in the third trimester. It is worthwhile to note both calcium and magnesium level were found within normal range.

CONCLUSION

Serum levels were constant during the different trimesters but serum magnesium levels were lowered in the last trimester as compared to the first and second trimester. However, findings were statistically insignificant. The present study was taken up as a preliminary study and a further study with an increase in the sample size is needed.

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