

Serum Magnesium Level in Normal and Abnormal Pregnancy

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Summary

This study was carried out in the department of Obstetrics and Gynaecology on 120 patients attending Nehru Hospital, B.R.D. medical College, Gorakhpur comprising of non-pregnant, normal pregnancy and abnormal pregnancy cases.

Serum magnesium level in non-pregnant cases was 2.42 ± 0.132 mg/dl while it was 2.0 ± 0.212 , 2.12 ± 0.199 and 1.89 ± 0.159 mg/dl in I, II and III trimester of pregnancy respectively.

The serum magnesium level in threatened, inevitable, missed and pregnancy with history of habitual abortion cases were found to be 1.72 ± 0.414 , 0.94 ± 0.351 , 0.61 ± 0.171 , 1.66 ± 0.309 mg/dl respectively which were significantly lower as compared to normal pregnancy group.

In the preterm labour and pre-eclampsia cases values were 1.14 ± 0.185 and 1.51 ± 0.217 mg/dl which was significantly lower than normal pregnancy group.

This study concludes that low serum magnesium level certainly predicts poor pregnancy outcome and suggests the role of magnesium supplementation for fruitful pregnancy.

Introduction

Magnesium is an indispensable constituent of all living cells. It has an important role in pregnancy. Normal serum magnesium value in non-pregnant women is accepted to be between 1.5-3.0mg/dl. There has been a speculation in the past about the possibility of pre-eclamptic women having low serum magnesium (Haurey and Canatrow, 1941; Martin and Wessman, 1952).

Low level has been seen to affect the successful outcome of pregnancy and profound decrease in the serum level has been seen in the cases of abortions (Dumont and Bernard, 1966).

Highly significant decrease in women with premature onset of labour (Khan et al, 1987).

Materials and Methods

The present study comprises of 120 patients who

were admitted or the patients who attended the out patient clinic in the department of Obstetrics and Gynaecology of Nehru Hospital, B.R.D. Medical College, Gorakhpur during the period of July, 1997 to November, 1998.

Apart from detailed history clinical examination and investigations serum magnesium levels were measured. Serum magnesium estimation was done by spectrophotometric method using calmagite dye.

Observation and Discussion

The magnesium level in normal pregnancy cases in Ist trimester decreases from that in non-pregnant cases. The results are consistent with those reported by Khan et al (1987). The mean serum magnesium level in IInd trimester is slightly higher than in Ist trimester and falls again in IIIrd trimester (Table I). Serum magnesium level in different types of abortions. The lowest serum magnesium levels were observed in missed and inevitable abortion cases, where the levels were slightly

higher in habitual and threatened abortion cases (Table I).

It is evident that there is a sharp decline in mean serum magnesium levels in all types of abortion cases compared to normal pregnancy cases in similar gestational periods, thereby suggesting a very strong correlation between magnesium level and abortion. These results are consistent with those reported by Singh

et al (1978) (Table I).

The mean serum magnesium level in preterm labour cases (Table II) is found to be 1.14 ± 0.185 mg/dl and is significantly lower than that of the corresponding gestational period (29 to 36 weeks) of normal pregnant cases i.e. 1.89 ± 0.159 mg/dl. It means that the low magnesium level and onset of pre-term labour are closely associated. These results are consistent with Khan et al

Table I
Serum magnesium level in normal pregnancy and different types of abortions

Author	Group	Serum magnesium Mean \pm S.D.	P value
In present study	Non pregnant	2.42 \pm 0.182	
	Normal pregnant		
	I	2.0 \pm 0.212	
	II	2.12 \pm 0.199	
	III	1.89 \pm 0.159	
	Abortion		
	- Threatened	1.72 \pm 0.414	0.001
- Inevitable	0.94 \pm 0.351	0.001	
- Habitual	1.66 \pm 0.309	0.001	
- Missed	0.61 \pm 0.171	0.001	
Khan et al (1986)	Non-pregnant	2.53 \pm 0.30	
	Normal pregnant		
	II	2.06 \pm 0.38	
	III	1.98 \pm 0.36	
Singh et al (1978)	Abortion		
	- Threatened	1.709 \pm 0.070	
	- Habitual	1.607 \pm 0.61	
	- Missed	1.980 \pm 0.101	

Table II
Serum magnesium level in normal pregnancy and preterm labour

Author	Group	Serum magnesium Mean \pm S.D. (mg/dl)	P value
In present study	Normal pregnancy	1.89 \pm 0.159	
	Preterm	1.14 \pm 0.185	0.001
Khan et al (1986)	Normal pregnancy	1.82	
	Preterm	1.17	0.01

Table III
Serum magnesium level in normal pregnancy and pre-eclampsia

Author	Group	Serum magnesium (mg/dl) Mean \pm S.D.	P
In present Study	Normal	1.82 \pm 0.219	
	Pre-eclampsia	1.51 \pm 0.217	0.01
Kisters et al (1990)	Normal	1.33 \pm 0.29	
	Pre-eclampsia	1.01 \pm 0.16	0.05

(1987), Kurzel et al, 1991. But Nalini et al (1997) reported no significant difference between normal pregnancy and preterm labour cases.

The mean value in pre-eclampsia cases is 1.51 ± 0.217 mg/dl. When compared to the mean level in normal pregnancy cases under corresponding gestational period 34-40 weeks, 1.82 ± 0.219 mg/dl, it is seen that the level significantly decrease in pre-eclampsia cases (Table III). These findings are similar to Kisters et al (1990)

Conclusion

This study concludes that serum magnesium level can be considered as an important element for the high risk pregnancy involving abortions, preterm labour and pre-eclampsia. The serum magnesium level below 1.5mg/dl certainly predicts poor pregnancy outcome.

Therefore serum magnesium level estimation must be done in high risk cases to get a successful pregnancy outcome.

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