

EFFECT OF MATERNALLY ADMINISTERED MAGNESIUM SULPHATE ON NEONATES IN PATIENTS WITH ECLAMPSIA

CHHAYA SARODEY • MALA INGLE

SUMMARY

34 Neonates were evaluated for effects of hypermagnesemia, delivered of eclamptic mothers receiving Magnesium Sulphate. It was found that there was no correlation between total dose of Magnesium to mother and cord magnesium levels or perinatal mortality. There was no correlation found between the birth weight and Apgar scores and neurological performance with the cord magnesium levels. Prematurity was the single most important factor for the increase in perinatal mortality.

Introduction

The Magnesium Sulphate regime was introduced in Medical College Hospital, Nagpur in 1986 and therefore the need to evaluate the effects of maternally administered Magnesium Sulphate on the neonates were felt necessary and hence this study was undertaken to see the effects of hypermagnesemia on the neonates.

Material and Methods

34 neonates of antepartum eclamptic who received Magnesium sulphate therapy, whose FHR was audible on admission and whose gestation period was more than 28 weeks were selected in study groups and they were compared to an identical number of the control group whose

mother's were normotensive and did not receive Mag. sulphate therapy. Maternal and cord blood was obtained after delivery for the estimation of serum magnesium and calcium levels.

The neonates are examined immediately with regards to:-

1. Apgar score at 1 min. and 5 minutes.
2. Maturity
3. Neurological exam by neonatologist using the modified scarlon scoring system. Absent or weak response were recorded as low score while moderate or brisk response were recorded as high score.

1. Active tone : (a) Ventral suspension
(b) Neck tone - extensions flexor

*Department of Obstetrics and Gynaecology,
Government Medical College, Nagpur.*

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2. Passive tone : (a) Arm recoil
(b) General body tone
3. Reflexes : (a) Suckling
(b) Rooting
(c) Grasp
(d) Moro's.

Evaluation of neonates was done with special regards to:-

1. Cord Magnesium levels and total dose of Magnesium sulphate to mother.
2. Cord Magnesium levels and birth weight.
3. Cord Magnesium levels, Apgar scores and the neurological performance.
4. Total dose of Magnesium sulphate to mother and P.N.M.

Observations

1. Cord Magnesium levels of neonates whose mothers received Mag.

sulphate ranged from 2.1-7 Meq/L as compared to control group which was 1-2 Meq/L.

2. No correlation was found with the total dose of levels. The levels were varying.

3. Though apgar score was low in neonates below 2000 gm. There was no correlation between low Apgar score and cord Magnesium levels as shown in Table I.

4. No statistically significant correlation was found with cord Magnesium levels and birth weight of fetuses as shown in Table II.

5. Neurological status was assessed separately for term and preterm infants. Preterm infants of both groups had low scores but there was no correlation found between low scores and the cord magnesium levels as shown in Table III.

TABLE - I

Birth Weight	Apgar Score			Cord	Mag. Levels	
	<3	4-6	>7		<2	2.1-5
2000 gm	7	3	7	2	15	—
2100 gm	—	—	17	1	15	1

TABLE - II

Birth Weight	Cord Magnesium levels				Total	
	<2	2.1-3	3.1-4	4.1-5		>5
<1500 gm	—	1	7	1	—	9
1600-2000 gm	2	4	1	1	—	8
2100-2500 gm	1	2	6	3	1	13
>2600	—	3	—	1	—	4

TABLE NO. III

Cord Mag. Levels <2	2.1-3	3.1-4	4.1-5
No. of Infants	3	18	6
Low score infants	3	4	3

6. No correlation found between total dose of Magnesium Sulphate given to mother and perinatal mortality shown in Table IV.

TABLE NO. IV

Mag. Sulphate in grams.	No. of Patients	P.N.M.	%
14 - 20	24	8	33.3%
21 - 25	8	1	12.5%
26 - 30	2	1	50%

TABLE V

Neonatal Outcome	Study	Control
Total No. of fetuses	34	34
Intrapartum death	3	—
Fetuses born alive	31	34
Neonatal deaths	7	4
P.N.M.	29.4%	11.7%
Corrected P.N.M. excluding fetuses 1500 gm	14.6%	2.9%

TABLE VI
CAUSES OF NEONATAL DEATHS

	Study	Control
Fetus below 1500 gm		
R.D.S.	2	—
Asp. Pneumonia	1	1
Intracervical Haemorrhage	1	1
Congenital anomalies	1	1
Fetus above 1600 gm		
Intracervical Haemorrhage	1	—
Asp. Pneumonia	1	1

All neonatal deaths occurred in foetuses below 2 kg.

Discussion

Prematurity with its complication is commonly associated with eclampsia and this adversely influences the neonatal outcome. Baha Sibai et al had 56% while Lipstiz reported it in 43%. In the present study 67.7% of neonates were below 37 weeks of gestation. Baha Sibai et al (1983) reported 13% P.N.M. in preterm group while there was no perinatal mortality in term infants. Hall et al also concluded that the P.N.M. in eclampsia is mainly due to prematurity. Stone and Pritchard 1970 proved that every like born infants who weight more than 1800 survived when mothers were given Magnesium sulphate. In the present study too, all deaths occurred in neonates weighing less than 2000 gms. Stone & Pritchard (1970) again proved that there are correlation between birth weight Apgar score and cord Mag. levels of these neonates. The present study was comparable with this Table I & II. Also there was no correlation between serum Mag. levels in mother cord magnesium levels and the perinatal mortality Table IV.

Green et al 1983 on evaluating these neonates reported that though cord magnesium levels were increased but Apgar score, respiratory heart rate were similar to control group. Further, the neurological performance was similar in study and control group. The present study also supports this view Table III.

Baha Saibai et al 1983 reported that neonatal complications in preterm infants were similar regardless of present of eclampsia. RDS in 27.5%, Pritchard reported RDS in 42 infants and present study 8.6%.

**P.N.M. REPORTED BY VARIOUS AUTHORS
USING MAG. SULPHATE THERAPY**

Authors	Year	PNM %
Hall et al	1957	21.6%
A. Crefti	1964	6.8%
Pritchard J.A.	1967	21%
Philip J. Lipsitz	1971	16.6%
Sibai et al	1977-80	5%
Pritchard J.A.	1983	10%
Sibai et al	1983*	13%
Present series	1988	15.6%

Conclusion

It can be said that Magnesium sulphate according to this dose schedule was not deliterious to the fetus in utero. All the neonatal deaths occurred in foetus

weighing below 200 gms. Therefore better facilities and more beds in the intensive neonatology care unit is justified. The protocol that improves the maternal and fetal salvage must be followed and therefore clinical application of Magnesium sulphate regime in eclampsia is justified.

References

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