CHANGES IN PERINATAL OUTCOME DUE TO MAGNESIUM SULPHATE IN ECLAMPSIA

PANKAJ DESAI ● HITESHA BADHEKA ● MANISHA BARBHAIYA ● MALINI DESAI ● DIPTI MODY

SUMMARY

Changes in perinatal outcome of eclamptic mothers who have been administered Magnesium Sulphate as anticonvulsant has been studied in two groups of eight years each - 1975 thru 1982 (Pre-Mag. sulphate years) and 1987 - 1994 (Post-Mag. sulphate years) have been compared. It was found that perinatal mortality rate declined significantly from 51.48% to 33.83%. This was contributed to by a similar decline in early neonatal deaths from 17.04% to 9.77%. However still births did not reduce significantly. There was a significant reduction in severe birth asphyxia and pulmonary haemorrhage in the newborns of post magnesium sulphate years.

INTRODUCTION

Every episode of convulsion in eclampsia has a potency to affect the fetus. Even a single episode can kill the mother as well as unborn child (Brown : 1988). It is therefore of interest to study the efficacy of magnesium sulphate in improving the perinatal outcome by acting as an anti-convulsant, when Pritchard et al (1984) revived the use of this agent in the treatment of eclampsia, it was envisaged that both the maternal as well as fetal outcome would improve.

We started using this drug in 1984 as soon as the results of Pritchard were published. But it took three more years for all four units in our institution to adopt it as a standard treatment in management of mothers with eclampsia. It is therefore in the fitness of things now to analyse as to what changes could be affected on perinatal outcome following magnesium sulphate therapy.

Dept. of Obst. & Gynec. Medical College & SSG Hospital, Baroda.

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MATERIAL & METHODS

This study has been carried out in the Dept. of Obst. & Gynec., Medical College and SSG Hospital, Baroda. Cases of mothers with eclampsia were analysed in two groups, each one of eight years : First group was from 1975 thru 1982 wherein the use of magnesium sulphate in cases of eclampsia had not yet commenced. The second group was from 1987 thru 1994 wherein this drug was adopted by all four units of our institution in all cases of eclampsia.

It was used as MgSO4' 7H2O (U.S.P.) in a dosage, of 4 gms. intravenously and 5 gms. intramuscularly on each buttock, on admission to the mother. This was the bolus dose of total 14 grams. It was followed by 5 grams intramuscularly every six hourly on alternate buttock for upto 24 hours after the delivery or after the last convulsion, whichever is earlier. A strict vigil was continuously maintained for any toxicity signs of the drug viz. respiratory depression, oliguria/anuria or depressed knee jerk-reflex.

There was no change in the routine of administration of sedation in pre-magnesium sulphate and post-magnesium sulphate years. Antihypertensives were also used similarly, in both the groups of years without any significant and remarkable change.

It was therefore magnesium sulphate which was THE change in management of eclampsia cases over these years.

Condition of all babies born to these mothers was recorded in the form of APGAR, subsequent complication if any and the cause of death of the newborn - if any. Differences in fetal outcome in these two groups of years were identified, statistically analysed and evaluated in the light of current literature.

RESULTS

During the years 1975 thru 1982, in all there were 293 mothers admitted at our institution with eclampsia. During 1987 thru 1994, the second phase - the post magnesium sulphate phase, there were 605 such mothers. In the pre magnesium sulphate phase there were 23 cases admitted with post partum eclampsia, the same figure rising to 73 in the second phase. These were not included in the study as the drug was administered in them after the delivery and therefore will obviously not have any bearing on their neonatal outcome.

Interestingly, in the post magnesium sulphate years, referred cases rose significantly at the institute from 5.46% to 51.4%. However the age of occurrence and the parity showed no significant difference in the two year groups.

As shown in table I, in the post magnesium sulphate years, there were significantly more babies born after 36 weeks ($P < 0.01$). This was at the cost of maturity between 33 to 36 weeks which fell from 54.8% to 22.74%.

(Table II) In the year group when magnesium sulphate use became a standard, perinatal mortality declined from 51.48% in premagnesium sulphate years to 33.83%. This difference was statistically significant ($P < 0.01$). Interestingly this difference was largely due to the better salvage of early neonates as shown in the drop in their death rate in percentage from 17.04% to 9.77% ($P < 0.01$). However, the still births rate had also declined but not significantly.

(Table III) As regards the neonatal mor-

Table I
Gestational Age

Gest. Age (Wks.)	Pre-Mag. Sulf. No.	%	Post Mag. Sulf. No.	%
Less than 33	70	25.93	146	32.14
33 to 36	135	54.81	97	22.74*
More than 36	65	26.67	289	58.83*

* Difference statistically significant.

Table II
Neonatal Outcome

Outcome	Pre-Mag. Sulf. No.	%	Post Mag. Sulf. No.	%
Alive	136	50.37	278	52.26
Still births	93	34.44	128	24.06
Early Neonatal death	46	17.04	52	9.77*
Perinatal Mortality	139	51.48	180	33.83*

* Difference statistically significant.

Table III
Neonatal Morbidity

Morbidity	Pre-Mag. Sulf. No.	%	Post Mag. Sulf. No.	%
Intracranial Haemorrhage	03	1.11	03	0.56
Septicaemia	08	2.96	15 2.82	2.82
Severe birth Asphyxia.	41	15.19	47	8.83*
Hyperbilirubinemia	13	4.81	14	2.63
Pulmonary Haemorrhage.	12	4.44	03	0.56*

* Difference statistically significant.
* Difference statistically significant but limitation accepted.

bidity, severe birth asphyxia significantly declined from 15.19% to 8.83% (P< 0.01). Pulmonary haemorrhage also showed a significant decline, but the number of cases were only 12 and 3 in the pre and post magnesium sulphate years respectively. Therefore, the conclusion of this result should be considered applicable only to this study and may not be applicable to the entire community, in general. No other morbidity declined significantly.

DISCUSSION

One of the many promises which magnesium sulphate revivers in eclampsia management made was a better perinatal outcome (Pritchard et al 1985). Largely enough, these promises seem to have been kept. However, these are identifiable areas in the results of the present study, wherein efforts beyond magnesium sulphate may be required.

In post magnesium sulphate years, babies are born with increasing maturity. This is a welcome change as efforts to salvage these babies with nil or minimal morbidity, is likely to yield better results.

Perinatal mortality significantly declined after magnesium sulphate use from 51.48% to 33.8%. But this has not yet reached the figure between 12% to 13% which some other workers have reported (Dubay et al 1994, Bhattacharya et al 1992). This could be due to a insignificant fall in still birth rates.

Borges & Guler (1978) showed that magnesium sulphate can exert an anticonvulsant effect without depressing the fetus. This could be seen even in this study wherein there was no increase in incidence of CNS depressed babies born to mothers with eclampsia in whom magnesium sulphate was given.

We found a significant fall in severe birth asphyxia in post magnesium sulphate babies. This is important from the fact that Pritchard et al 1985) suggested that there could be a neonatal compromise after intramuscular therapy of magnesium sulphate. We have not found any such effect though the protocol of administration followed by us has the major component being administered intramuscularly.

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