EFFECT OF MAG-SULPHATE IN CHANGING THE MATERNAL OUTCOME ASSOCIATED WITH ECLAMPSIA

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SUMMARY

Two phases of 8 years each, from 1975 thru 1982 and 1987 thru 1994 have been studied for maternal outcome in eclampsia. In the second phase, Magnesium sulphate had been a standard use and therefore served as the magnesium sulphate years and the former phase as pre-magnesium sulphate years as it was not being used at the institution. It was found that the number of referred cases significantly rose at the institution. Maternal mortality was significantly reduced in magnesium sulphate years. However, maternal morbidity remained by and large unchanged. But, incidence of intracranial haemorrhage significantly declined. Number of fits after treatment fell from an average of 11.2 to 2.1 in the magnesium sulphate years. The mode of delivery registered no significant difference.

INTRODUCTION

Admission for eclampsia at any government medical college hospital in India is very much a common event. Devastating effects of this condition on maternal as well as fetal outcome are well known. Even one convulsion is documented to produce sudden death due to massive cerbral haemorrhage (Brown ; 1988). Many antepartum and intrapartum events associated with eclampsia like convulsion can affect the feto-maternal outcome. These include renal failure, pulmonary edema, coma and the like.

Introduction of magnesium sulphate in a big way in the treatment of eclampsia as well as its prevention, by Pritchard et

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al (1984), held out a big promise for these mothers. Consistent failure to decrease maternal mortality in eclampsia in U.K. from 1970 to 1981 was also arrested and a trend of further fall was reported (Turnbull et al 1987) due largely to this drug. Van Assche (1989) also presented a persuasive argument in favour of magnesium sulphate.

In our institution Magnesium Sulphate was introduced in 1984 in one unit for treatment of eclampsia. As with any new ones it met with a resistance and it took 3 years for all four units to finally adopt it as a standard treatment modality for eclampsia. Time has now come for us to undertake an exercise of medical audit as to how much and where, if at all, did this drug change the scenario of eclampsia in these 8 years or so.

MATERIAL & METHODS

This analysis has been carried out in the dept. of Obst. and Gynec., Medical College and SSG Hospital, Baroda. Eclampsia cases were scrutinized in two phases of 8 years each. First phase of 8 years from 1975 thru 1982 and second phase of eight years from 1987 thru 1994. During the first phase Magnesium Sulphate was not introduced for treatment of eclampsia cases at our institution. In the next phase commencing from 1987 not only was this drug introduced but all four units of the department were now uniformly and regularly using it.

Magnesium Sulphate as an anticonvulsant is used as $MgSO_4 \cdot 7H_2O$ (U.S.P.) in a dosage of : 4 gms intravensouly and 5 gms. intramuscularly on each buttock bringing this bolus dose to 14 gms on admission.

This bolus is followed by 5 gms intramuscularly every 6 hourly on alternate buttock for upto 24 hours after the delivery or the last convulsion whichever is earlier. During this period a strict monitoring for any toxicity signs is done by keeping a carefull watch on the urine output, knee jerk reflex and respiratory rate.

Sedation if required is given as Pentazocin 30 mgm intramuscularly alternating with promethazine 25 mgs. every 6 hourly. This was the pattern of use of sedation even before the use of magnesium sulphate.

Use of antihypertensives have been confined to these cases only on regaining full consciousness as we still do not have an access to safe antihypertensives which can be used parenterally.

In last one to two years one unit has started using Nifedipine sublingually. However it is still to become a part of standard protocol in all units and therefore has hardly any bearing on the overall results, as yet. It was therefore Magnesium Sulphate which was the only consistent agent which was introduced and used by al units and therefore the results could reliably quantify its affects over a period of these decades.

RESULTS

During the first phase of 8 years when magnesium sulphate was not used for eclampsia, there were 293 subjects admitted with this condition. On the other hand in the 8 years of magnesium sulphate use, 605 cases of eclampsia were admitted. With the passing years one may expect eclampsia cases to get reduced but this has indeed not happened. However the explanation thereof is clear in Table I.

Table I
ANTENATAL CARE

	Pre Mag. Sulf.		Mag. Sulf.	
	No.	%	No.	%
Booked	32	10.92	39	6.44
Emergency	245	83.61	255	42.14*
Referred	16	5.46	311	51.40*
Total	293		605	

* Difference statistically significant.

TABLE II
MATERNAL MORTALITY

	Pre Mag. Sulf.		Mag. Sulf.	
	No.	%	No.	%
Total Maternal death	433		338	
Total cases of Eclampsia	293		605	
Deaths Following Eclampsia	25	8.53	26	*4.29
CAUSE -				
Pulm. Edema	07	1.62	04	1.19
C.V. Stroke	02	0.46	02	0.59
Pulm. Embolism	01	0.23	03	0.89
Amniotic fluid Embolism	01	0.23	03	0.89
Cerebral H'hage	02	0.46	03	0.89
DIC	02	0.46	01	0.30
Septicaemia	00	0.00	01	0.30
Renal failure	03	0.69	00	0.00
ARDS	00	0.00	03	0.89
Others	07	1.62	06	1.78

* Difference statistically significant.

As shown in this table, the incidence of referred cases increased from 5.46% to 51.4% the difference being statistically significant (P < 0.0001). Thus, with the availability of doctors at the referring centres increasing, these cases which never reached the institution, now started reaching it. Also, unbooked cases, who never had antenatal care were reduced from 83.6% to 42.14%. This difference was also statistically significant (P <0.001).

As shown in Table II, during the two phases of study period, there were totally 433 maternal deaths in pre-magnesium sulphate years and 338 in magnesium sulphate years. Of these, deaths in mothers admitted with eclampsia and its complications, were 8.53% and 4.29% respectively. This difference was statistically significant (P < 0.001). But there was no significant difference in the causes of maternal deaths in eclampsia each during the two phase of 8 years.

(Table III) Major and potentially life threatening maternal morbidities have been compared in mothers of pre magnesium sulphate years and magnesium sulphate years. The overall morbidity rate in both these groups remained in significantly different. However, the incidence of intracranial haemorrhage fell from 5.19% to 1.96%. This difference is statistically significant (P 0.01). But the fact that the numbers of cases were only 15 and 12 in the two groups respectively, has to be considered before applying this result to a larger group of population. This limitation is accepted in the principles of statistical annalysis.

(Table IV) The average number of fits, a woman suffering from eclampsia, after admission (that means after instituting the treatment), was 11.2 in pre-magnesium sulphate years compared to 2.1 in magnesium sulphate years.

TABLE III
MATERNAL MORBIDITY

	Pre Mag. Sulf.		Mag. Sulf.	
	No.	%	No.	%
Renal failure	06	2.04	03	0.49
Pulm. Edema	02	0.68	09	1.48
Paresis	00	0.00	02	0.33
Hepatic involvement	01	0.34	0.3	0.49
Intracranial H'hage	15	5.11	12	2.96*

* Difference statistically significant
(Limitation accepted)

TABLE IV
AVERAGE NO. OF FITS AFTER ADMISSION

Pre Mag. Sulf.	:	11.2
Mag. Sulf.	:	02.1

TABLE V
MODE OF DELIVERY

	Pre Mag. Sulf.		Mag. Sulf.	
	No.	%	No.	%
L.S.C.S.	19	7.06	43	10.89
Normal Vaginal	147	54.65	205	51.9
Instrumental	103	38.29	147	37.21

(Table V) As shown in Table V there was no statistical difference in the mode of delivery in the pre magnesium sulphate and magnesium sulphate years.

DISCUSSION

Magnesium sulphate was used as an anticonvulsant for many years. But its revival in cases of eclampsia by Pritchard et al (1984) was heralded as an extremely important development in the management of eclampsia. In the late 1920s, extremely poor obstetric outcome had led to the slogan - "treat the eclampsia medically and ignore it obstetrically". Convulsions were often controlled but coma persisted thanks to the medications rather than the disease. (Redman : 1988). This picture was promised a change with the revival of magnesium sulphate in eclampsia. Many institutions like ours are using this drug now over a decade. It is therefore in the fitness of things to sit down and analyse, how much did the picture change indeed.

The observation that referred cases to the institution have significantly increased has to be borne with the fact in mind that though the incidence of eclampsia at the institution may not have reduced accross the board, this may not reflect the picture in the society. It only indicates that more cases are now being referred than those in the past.

Inspite of distinctly higher referrals for eclampsia, significantly more mothers are now saved after magnesium sulphate use than in days when this was not the case. Sandhu et al (1993) have found the maternal mortality to bb 4% in eclampsia. However the western figures for this are 0.4% (Pritchard 1984, Sibai et al 1993). The reasons for this difference is understandable in the context of the basic differences in health care systems and its associated factors in our country

and in the west.

Interestingly however, if the eclamptic mother is to die, then the cause of death in pre-magnesium sulphate and magnesium sulphate years have not altered significantly.

Incidences of maternal morbidities in eclampsia have not significantly altered, except the fact that the incidence of much dreaded intracranial haemorrhage has decreased significantly in our study.

Precipitous decline in the number of fits after magnesium sulphate administration was the promise of this drug which indeed seems to have been fulfilled. The average number of fits declined due to this drug from 11.2 to 2.1. Dubey et al (1993) and Sandhu et al (1993) reported a 0.00% fit recurrence. We have not got such a good fit controll to report but the decline is very distinct. However Bhatt and Barfiwala (1985) reported 1.3% recurrence and Nagar et al (1988) reported 1.98% recurrence. These figures are comparable to there in the present study. Thus magnesium sulphate has proved to be an effective anticonvulsant in eclampsia.

C.S. rates in eclampsia in institutions similar to that of ours have risen in our country (Shah and Dandekar 1993; Dubey al-1993, Bhattacharya et al 1993)?. However, C.S. rates at our institution in cases of eclampsia have not shown any significant difference.

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