A CLINICAL STUDY OF 100 CASES OF ECLAMPSIA AND 50 CASES OF SEVERE PREECLAMPSIA WITH OUTCOME OF TREATMENT WITH MAGNESIUM SULPHATE AND KEEPING LYTIC COCKTAIL AS CONTROL IN 10 CASES OF ECLAMPSIA

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ABSTRACT

BACKGROUND

Eclampsia and severe preeclampsia are still major contributors to maternal mortality all over the world. Although, incidence has gone down in developed countries, incidence is still very high in developing countries. In our country, incidence of preeclampsia is 5 - 15%, whereas incidence of eclampsia among hospital admissions is 1 in 500 to 1 in 30. Incidence varies among different areas of same country. Lack of awareness for antenatal check-up, illiteracy, unavailability of quality antenatal check-up facility etc. are main causes why PIH and Eclampsia are diagnosed late and many a times patients come with complications like pulmonary oedema, coagulation failure, accidental haemorrhage, acute renal failure etc. Gold standard treatment of severe preeclampsia and eclampsia is MgSO₄ along with antihypertensive and induction of labour to expedite the delivery within 12 hrs. and 24 hrs. in eclampsia and severe preeclampsia respectively. But still in remote areas, MgSO₄ is not available.

This study was undertaken to see the outcome of treatment with MgSO₄ in 100 cases of Eclampsia and 50 cases of severe Preeclampsia, keeping lytic Cocktail (Menon 1961, chlorpromazine, promethazine and pethidine injections) as control in 10 cases of Eclampsia.

KEY WORDS

Preeclampsia, Eclampsia, MgSO₄, Lytic Cocktail.

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BACKGROUND

Preeclampsia is a condition where BP is more than 140/90 mmHg with proteinuria with or without oedema after 20 weeks of pregnancy. When PET is associated with convulsion, it is eclampsia (other causes of convulsion being ruled out).

Eclampsia is one of the dreaded complications of pregnancy. Incidence of eclampsia has gone down in developed countries from 0.7% (McDonald, 1976) to 0.05% (Alexander et al, 2004).

In India too incidence has declined, but still remains very high from 0.1% to 2% (Ratnam, Vol. 11, 1994). M. Chandra and Bhardwaj (1998) found that incidence of eclampsia was 1.56%. Situation is gloomy in this part of the country.

Here, incidence of eclampsia is 2.7 to 4% and maternal mortality due to this is 27 - 30%. Perinatal mortality is particularly high following eclampsia (Collab trial 1995; Douglas 1994).^[1]

Illiteracy, poverty, lack of awareness, lack of facility for quality antenatal check-up in remote areas, poor transport facility and road conditions all together are responsible for high incidence of eclampsia and maternal mortality.

MATERIALS AND METHODS

100 cases of eclampsia and 50 cases of severe preeclampsia who were admitted in labour room of Rajendra Institute of Medical Sciences, Ranchi between September 2005 and

September 2006 were studied. Of these 100 cases of eclampsia, 90 cases were given MgSO₄ as anticonvulsant and in 10 cases lytic cocktail was used.

- Common regimen of magnesium sulphate used was loading dose of 4 gm of 20% magnesium sulphate solution given IV slowly + 10 gms of 50% magnesium sulphate given IM 5 gm in each buttock. Maintenance dose of 5 gm of 50% magnesium sulphate IM was repeated 4 hourly till 24 hrs. after delivery or convulsion whichever is later (Dinsdale 1988; Pritchard 1955; Zuspan 1978).^[2,3,4] Lytic cocktail is a mixture of drugs used for women with eclampsia. These are usually chlorpromazine, promethazine and pethidine (meperidine). First introduced in India by (Menon 1961).^[5] These combination of drugs was thought to lower blood pressure and sedate the central nervous system.
- The mode of action for magnesium sulphate in control of eclamptic seizures and prevention of recurrent convulsions is still not clearly understood. This anticonvulsant activity may be mediated by magnesium's role as an N-Methyl-D-Aspartate (NMDA) antagonist (Euser 2009).^[6]
- Magnesium may prevent and control eclamptic seizures by inhibiting NMDA receptors. Other possible mechanism are that magnesium sulphate may lead to cerebral vasodilatation with subsequent reduction of cerebral ischaemia (Belfort 1992).^[7]

Among the 50 cases of severe preeclampsia, in 10 cases MgSO₄ was not given and was kept as control. Soon after arrival of patient, a quick history was taken from the attendant and in the meantime, treatment was also started simultaneously. Patients were divided into different groups according to age and parity of patient.

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Quick Enquiry was done about- Patient is booked or unbooked case

- No. of antenatal check-ups done.
- Presenting complaint was noted.

Mode of Onset

Any premonitory symptom was present or not, e.g. severe headache, blurred vision, epigastric pain, vomiting, diminished vision etc.-

- Time of onset of 1st convulsion.
- Number of convulsions thereafter.
- Any symptom of labour pain.
- In case of post-partum eclampsia- interval between delivery and onset of fit was noted.
- Details of treatment received outside before coming to hospital.

Menstrual History

Gestational Age was Calculated, and Patients were divided in Three Groups-

- Less than 34 weeks.
- Between 34 - 37 weeks.
- Between 37 - 40 weeks.

Obstetrical History

Patients were divided in Five Groups of having Parity:

- Zero.
- One.
- Two.
- Three.
- Four or more.

Past History

Detailed Relevant Past History

- Seizure disorder.
- Past history such as diabetes, chronic hypertension and autoimmune disease (Duckitt 2005).^[8]
- Renal disorder.
- Toxaemia of pregnancy in previous confinement if any.

Family History

- Hypertension.
- Diabetes.
- Toxaemia of pregnancy in 1st degree relative.
- Thorough general examination.
- Obstetrical examination.

Important Findings of the Study

- The general incidence of severe preeclampsia was 3.45%, i.e. 1 in 29.
- The general incidence of eclampsia was 5.03%, i.e. 1 in 20.
- Maximum incidence was found in patients of less than 20 years of age.
- Most patients belonged to low socioeconomic status with 82.7% of patients having no antenatal check-ups.
- 71.4% of patients were primigravida in both eclampsia and severe preeclampsia.
- Antepartum eclampsia being the commonest 77% with intrapartum eclampsia 8% and postpartum eclampsia 15%.

- 55% patients were admitted within 12 hours of convulsive attack.

Treatment Regimen	Antepartum Eclampsia	Intrapartum Eclampsia	Postpartum Eclampsia
Magnesium Sulphate	73	6	11
Lytic Cocktail	4	2	4
Total	77	8	15
Percentage	77%	8%	15%

Table 1. Distribution of Cases according to Types of Eclampsia

Systolic Blood Pressure (mmHg)	Severe Preeclampsia		Eclampsia	
	Magnesium Sulphate Group	Control Group	Magnesium Sulphate Group	Lytic Cocktail Group
140-158	0	0	7	2
160-200	33	7	63	6
>200	7	3	20	2
Diastolic Blood Pressure (mmHg)				
90-108	0	0	12	3
110-120	28	6	61	5
>120	12	4	17	2

Table 2. Systolic and Diastolic Blood Pressure at the Time of Admission

p= 5.991

Diastolic Blood Pressure (mmHg)	Severe Preeclampsia				Eclampsia			
	Magnesium Sulphate Group		Control Group		Magnesium Sulphate Group		Lytic Cocktail Group	
	Pre Rx	Post Rx	Pre Rx	Post Rx	Pre Rx	Post Rx	Pre Rx	Post Rx
90 to 108	0	24	0	4	2	55	1	4
>110	40	16	10	6	88	33	9	5
					2 patients died within 24 hours of treatment		1 patient died within 24 hours of treatment	

Table 3. Diastolic Blood Pressure before and after 24 Hours in Four Treatment Groups

p= 3.84

	Severe Preeclampsia		Eclampsia	
	Magnesium Sulphate Group	Control Group	Magnesium Sulphate Group	Lytic Cocktail Group
Total No. of Patients	40	10	90	10
No. of Patients (Occurrence/ Recurrence of Fit)	0	3	2	3
Percentage	0	30%	2.2%	30

Table 4. Occurrence of Fits in Severe Preeclampsia and recurrence of Fits in Eclampsia Cases

p= 3.84

Treatment Delivery Interval	Severe Preeclampsia		Eclampsia	
	Magnesium Sulphate Group	Control Group	Magnesium Sulphate Group	Lytic Cocktail Group
<24 hrs.	27 (67.5%)	7 (70%)	64 (83.11%)	4 (80%)
>24 hrs.	13 (32.5%)	3 (30%)	13 (16.9%)	1 (20%)
Undelivered (Died)			2	1
Postpartum			11	4

Table 5. Treatment Delivery Interval in Four Treatment Groups

p= 3.841

Mode of Delivery	Severe Preeclampsia		Eclampsia	
	Magnesium Sulphate Group	Control Group	Magnesium Sulphate Group	Lytic Cocktail Group
Normal Delivery	24	6	44	3
Forceps	2	1	11	1
Craniotomy	--	--	--	--
Postpartum Eclampsia	--	--	11	4

Table 6. Mode of Delivery in Four Treatment Groups

p= 5.99

	Severe Preeclampsia		Eclampsia	
	MgSO ₄ Group	Control Group	MgSO ₄ Group	Lytic Cocktail Group
	Total No. of Cases (%)	Total No. of Cases (%)	Total No. of Cases (%)	Total No. of Cases (%)
Coma	0	0	11 (12.2%)	4 (40%)
Hyperpyrexia	0	0	9 (10%)	1 (10%)
Pulmonary Oedema	0	0	3 (3.3%)	1 (10%)
Oliguria	4 (10%)	1 (10%)	8 (8.8%)	1 (10%)
UTI	2 (5%)	1 (10%)	4 (4.4%)	1 (10%)
PPH	1 (2.5%)	1 (10%)	4 (4.4%)	1 (10%)
Puerperal Psychosis	--	--	1 (1.1%)	1 (10%)

Table 7. Maternal Pattern in Relation to Therapy

p= 12.59

	Severe Preeclampsia		Eclampsia	
	MgSO ₄ Group	Control Group	MgSO ₄ Group	Lytic Cocktail Group
	Total No. of Cases (%)	Total No. of Cases (%)	Total No. of Cases (%)	Total No. of Cases (%)
RTI	--	--	8 (8.8%)	1 (10%)
Shock	--	--	2 (2.2%)	--
Bedsore	--	--	--	--
Abruptio placentae	4 (10%)	2 (20%)	6 (6.6%)	2 (20%)
Pain at injection site	1 (2.5%)	0	6 (6.6%)	0
DIC	0	0	1 (1.1%)	0
CVA	0	0	2 (2.2%)	1 (10%)

Table 7. (Contd..)

	Severe Preeclampsia		Eclampsia	
	Magnesium Sulphate Group	Control Group	Magnesium Sulphate Group	Lytic Cocktail Group
No. of Deaths	0	0	6	2
Maternal Mortality	0	0	6.6%	20%

Table 8. Maternal Mortality of Four Treatment Groups

p= 0

Magnesium Sulphate Group	Lytic Cocktail Group
Total No. of deaths- 6 (6.6%)	Total No. of deaths- 2 (20%)
Causes implicated	Causes implicated
Deep coma with cardiorespiratory arrest- 2	Deep coma with cardiorespiratory arrest- 1
Pulmonary oedema- 2	
Acute renal failure- 1	
DIC and shock- 1	Pulmonary oedema- 1

Table 9. Causes of Maternal Death

p= 0

	Severe Preeclampsia		Eclampsia	
	Management Sulphate Group	Control Group	Management Sulphate Group	Lytic Cocktail Group
Total Births	40	10	88	9
Home Delivery				
Alive	--	--	6	2
Stillbirth	--	--	4	1
Neonatal Death	--	--	1	1

Table 10. Perinatal Outcome of all Births (Home or Hospital) in the Four Management Groups

	Severe Preeclampsia		Eclampsia	
	MgSO ₄ Group	Control group	MgSO ₄ Group	Lytic Cocktail group
Hospital Delivery				
Absent FHS on admission	1	0	10	1
FHS present at admission	39	10	69	5
Stillbirth	0	1	4	1
Early neonatal death	0	0	3	1
Perinatal death in all patients	2.5%	10%	24.4%	50%
Neonatal mortality in patients with FHS present at admission	0	10%	10.1%	40%
Went home with live baby	97.5%	90%	75.6%	50%

Table 10. (Contd..)

p= 12.59

	Severe Preeclampsia		Eclampsia	
	MgSO ₄ Group	Control Group	MgSO ₄ Group	Lytic Cocktail Group
Nil (No complications)	26 (65%)	5 (50%)	46 (51.1%)	1 (10%)
Birth Asphyxia				
Apgar 4-6	8 (20%)	2 (20%)	12 (13.3%)	2 (20%)
Apgar 1-3	0	1 (10%)	2 (2.2%)	1 (10%)
Meconium Aspiration	3 (7.5%)	1 (10%)	6 (6.6%)	1 (10%)
Septicaemia	0	0	6 (6.6%)	1 (10%)
Hyperbilirubinaemia	0	0	4 (4.4%)	--
Intracranial Haemorrhage	0	0	--	--
Table 11. Neonatal Morbidity Pattern in Four Treatment Groups				

p= 12.59

Statistical Analysis

Qualitative variables were analysed using proportions. Quantitative variables were analysed using mean and standard deviation. Chi-square test was applied to note if there was any statistical significance between the treatment with magnesium sulphate and lytic cocktail in eclampsia and severe preeclampsia cases and a "P" value of less than .05 was considered statistically significant.

RESULTS

Table III

In Table No. III, diastolic blood pressure has been compared before starting the treatment and 24 hours after treatment in study and control group. P-value is 3.84, that means it is not significant.

Table IV

In this table, comparison between occurrence of convulsion in severe PET and recurrence of fits in eclampsia in study group and control group has been done. P-value is 3.84, that means it is not significant.

Table V

Treatment and delivery interval in four treatment groups has been shown. P-value is 3.84. This again means it is not significant.

Table VI

Shows mode of delivery in four treatment groups. P-value is 5.99, that means treatment method does not have influence on mode of delivery.

Table VIII

Shows maternal mortality of four treatment groups. Here P-value is 0, that means magnesium sulphate treatment reduces maternal mortality.

Table IX

Shows causes of maternal deaths. P-value is 0, that means magnesium sulphate treatment reduces maternal mortality.

Table X

Shows perinatal outcome in different groups. P-value is 12.59, that means it is insignificant.

Table XI

Shows neonatal morbidity pattern in four treatment groups. P-value is 12.59. This again means mode of treatment does not have significant role in neonatal morbidity.

DISCUSSION

Incidence of eclampsia in this study was 5.03%, which is higher than previous studies. Incidence of imminent eclampsia was 3.45%.

Maximum patients were below 20 years' age group, 82.7% cases were unbooked. Majority of patients in both the groups were from lower and lower-middle socioeconomic strata. 71.4% patients were primigravida. 77% patients had antepartum eclampsia, 15% patients had postpartum eclampsia and 8% patients had intrapartum eclampsia.

Diastolic blood pressure became less than or equal to 90 mmHg after treatment with magnesium sulphate in 60% cases of imminent eclampsia and 61.4% cases of eclampsia as compared to 40% in control group. There was no fit in imminent eclampsia patients treated with magnesium sulphate, whereas 30% of patients of control group had fits.

Maternal mortality was significantly lower in magnesium sulphate group than lytic cocktail group (6.6% vs. 20%). Perinatal mortality was markedly better in magnesium sulphate group of imminent eclampsia patients as compared to control group (2.5% vs. 10%).

CONCLUSION

To conclude, it can be emphasised that magnesium sulphate is the drug of choice for the prophylactic (Duley 2003a)^[9] as well as therapeutic management of severe preeclampsia and eclampsia respectively (Duley 2003b; Duley 2003c).^[10,11] It is very efficient in the prevention of fits in severe preeclampsia and reduction in recurrence of fits in eclampsia. MgSO₄ is also efficient in reducing maternal morbidity and mortality. It also improved perinatal outcome.

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