



LOW DOSE MAGNESIUM SULPHATE REGIME FOR MANAGEMENT OF ECLAMPSIA AND PREECLAMPSIA

Gynaecology

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KEYWORDS

INTRODUCTION:

Eclampsia is derived from the Greek word meaning flash of lightning, to shine forth. It is defined as the occurrence of generalized tonic-clonic convulsion in women with pre-eclampsia not caused by any other neurological or medical disorders. It is one of the most common obstetrical emergencies in developing countries causing significant maternal and perinatal morbidity and mortality. Incidence of eclampsia is 1 in 2000 deliveries in developed countries and 1 in 50 to 500 deliveries in developing countries.¹ In India, the incidence of eclampsia ranges from 6 to 100 per 10,000 live births.² It accounts to 12% of maternal deaths worldwide as compared to 8% in India.³ The worldwide estimated eclampsia deaths per year is 50,000.⁴

The principle management for eclampsia is control of convulsions along with supportive life measures and termination of pregnancy. Magnesium sulphate (MgSO₄) is the first-line drug for eclampsia, which acts by reducing presynaptic release of glutamate neurotransmitter, by blocking glutamatergic N-methyl-D-aspartate (NMDA) receptors and calcium entry via voltage gated ionic channels.⁵ Various regimens are followed for management but Pritchard regimen is the most commonly used. The efficacy of MgSO₄ in severe preeclampsia and eclampsia is time tested in various studies. However, because of its narrow therapeutic index, toxic side-effects are the major area of concern in clinical use. Its safety and toxicity was recently reviewed by Smith and coworker; more than 9500 women were treated, overall rate of absent patellar reflexes was 1.6%, respiratory depression 1.3% and calcium gluconate administration 0.2%.⁶

Pritchard et al suggested that the dose of MgSO₄ should be limited in women who are known to be or appear to be small.⁷ Women in India, especially from rural areas or from low socio-economic strata tend to have smaller body weight. Administering Pritchard regime might prove to be hazardous in these low weight women and there is possibility of most dreadful respiratory failure.⁸ Reducing MgSO₄ toxicity without compromising its efficacy in controlling seizures and lowering mortality rates remains a major challenge.⁹

Therefore, the present study aimed to measure efficacy of low dose MgSO₄ regimen to prevent convulsions in preeclampsia and control of convulsions in eclampsia patients.

AIMS AND OBJECTIVE:

To study efficacy of low dose MgSO₄ regimen to prevent convulsions in preeclampsia and control of convulsions in eclampsia patients.

MATERIAL & METHODS: - This study was carried out in the Department of Obstetrics & Gynaecology, Dr.V.M. Medical College, Solapur. This study period covers cases of about one and half year. Total number 103 cases were admitted during this period. There are three units in our department and a fixed protocol was followed for the management of Eclampsia patients.

As soon as the patient is admitted her vital parameters were assessed. Our Eclampsia I.C.U. is having three cots, with minimum possible light in the room. Entry is restricted to avoid disturbance to the patients. Air way is inserted to prevent the tongue fall, oral suction is done whenever required. I.V. line is kept patent, Foley's catheterisation done, Eye pads were given to unconscious patients. Inj.

Diazepam 10 mg i.v. slowly given on admission to those cases who had convulsion just on admission or who are irritable. They were given Inj. MgSO₄ 4g diluted in 20 CC of 25% dextrose. i.v. slowly immediately on admission before doing any further examination. Maintenance does continued, 2 gm 3 hourly for 24 hrs after delivery or last convulsion whichever is later. We are following this low dose MgSO₄ therapy for last 10 yrs with results comparable to any other regimen.

Antihypertensive drugs like nifedipine are given either sublingually or orally as adjuvant therapy. "Termination of pregnancy" is the treatment for these Eclampsia patients; hence delivery is expedited either by induction / augmentation of labour.

Basic investigations in the form of LFT, KFT, funduscopy etc. were done on admission and repeated every 24 hrs. Patients vital parameters, input, output, deep tendon reflexes were strictly monitored every half hourly.

DATA ANALYSIS

A total 103 cases of Eclampsia are discussed here -

1) General Characteristic :-

	Characteristic	Cases	%
Age	< 20 yrs	64	62.14
	21 - 30	37	35.92
	31 - 40	2	1.94
Parity	Primi	81	78.64
	Multi	22	21.34
Registration	Supervised	29	28.16
	Unsupervised	74	71.84
Residence	Rural	49	47.57
	Urban	54	52.43

Majority of the patients are young (less than 20 yrs), primigravida with unsupervised pregnancy. As far as the residence is concerned there is equal proportion from urban as well as rural area.

2) Gestational age:

	Cases	%
< 30 wks	23	24.73
> 30 wks	70	76.17

3) Number of convulsions prior to admission: -

No. of Convulsions	No. of Patients	%
1 to 6	93	90.29
> 7	10	9.71

This data shows that some patients were in precarious condition at the time of admission.

4) Type of Eclampsia: -

Type	No. of cases	%
Ante / Intra partum Eclampsia	84	81.65
Postpartum	19	18.45

5) Signs on admission: -

Signs	Cases	%
Hypere flexia	73	70.87
Oedema	76	73.79
S.B.P.> 160	64	62.14

D.B.p > 110	62	60.19
Proteinuria	87	84.47
Fundoscopy	61	59.22
↑ KFT, LFT	4	3.88

6) Control of convulsions after treatment: -

	Cases	%
None	94	91.26
One	9	
Two	-	8.75
Three	-	

Any patient who has convulsion 30 minutes after loading dose is called as recurrence of convulsions. These patients are given inj diazepam 10 mg i.v. slowly and an additional dose of 2 gm Inj MgSO₄ the Scheduled dose is given as usual.

7) Mode of Delivery:

Type of Delivery	Cases	%
Instrumental	10	10.75
vaginal	72	77.41
Non Instrumental	11	11.82
Caesarean section		

8) Neonatal outcome: -

	Cases
Live Birth	63
Still Birth	25
Neonatal death	5
Perinatal mortality	34.09%

Eclampsia convulsions cause severe hypoxia and acidosis in foetus. Therefore perinatal mortality increases if number of convulsions increase.

Maternal mortality: - Total maternal deaths – 3.88 %

DISCUSSION

MgSO₄ is used as different regimens in different parts of the world. Pritchard regimen is the most widely used regimen all over the world. Despite its efficacy, narrow therapeutic index is always a cause of concern due to its toxicity.

As we all are fast approaching the 21st century and less time is left to achieve the goal laid down by 2000 A.D. to reduce the M.M.R to 2.

M.M.R. is a fine and sensitive measure of the quality of maternity services rendered in the community & health delivering system. Critical care includes Emergency medical care and intensive care with resuscitation forming integral part. A patient of Eclampsia is a critically ill patient, as one more convulsion may prove detrimental for her. These patients require careful & vigilant monitoring.

Pregnant woman is usually young and in good health. If she is given an intensive care earlier, prognosis is better than that of most patients admitted to an I.C.U. An ideal care is best provided by specially trained obstetricians & Obstetrical nurses with extensive knowledge & who have immense experience in critical care medicine. The approach should be multidisciplinary. Proper equipment is a basic prerequisite. There should be facilities available for invasive hemodynamic monitoring.

Timely drugs and strict adherence to protocol are the key features of Successful management. Doctors should be there round the clock at bed side of the patient keeping strict watch on all the important parameters.

Even though proper equipments and facilities for hemodynamic monitoring are not available, we obstetricians with the help of labour room nurses are able to give results comparable to any other well equipped hospital, for these critically ill patients.

Indian women have low weight and height as well as body mass index (BMI) than women from western countries. Low body weight decreases the volume distribution of magnesium and is recommended to decrease the standard dose for Indian population and overall cost of treatment, which is an important hindrance in achieving the universal health for all, where the availability and cost of injectable MgSO₄ is scarce and expensive.

Comparison between types of Eclampsia

Type of Eclampsia	% of patients		
	Pritchard's ^{10,11} study	Saibai's ^{12,13,14} study	Present study
Antepartum	91.21	71.00	78.26
Postpartum	8.79	29.00	21.74

It was seen that our findings were consistent with the previous studies.

Recurrence of Convulsions in eclampsia patients on magnesium sulphate, a comparison of various studies.

Study	Patients with recurrence of convulsions after starting Magnesium Sulphate	
	Number	%
Pritchard ^{10,11} n=83	10	12.1%
Sibai ^{12,13,14} n=254	36	14.2%
Present Study n=69	6	8.7%

It was observed that findings in our study were consistent with the other studies.

CONCLUSION:

Low dose Magnesium Sulphate therapy is ideal for patients in our setup. However much more can be achieved with early detection, proper referral and management of patients which remains a problem in rural areas.

The study concludes that Low dose Magnesium Sulphate regime is as effective as Pritchard regimen in control of fits and should be incorporated as an alternative in patients of low BMI in population of developing countries and low income groups where there is deficient trained manpower for monitoring.

Since the introduction of standardised protocol maternal mortality and perinatal mortality has come down in our institution. We sincerely hope that low dose magnesium sulphate regimen will be a major stepping stone towards the aim of safe motherhood.

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