Section: Obstetrics and Gynaecology

Original Research Article

COMPARATIVE STUDY OF THE EFFECT OF LOW DOSE MAGNESIUM SULPHATE VERSES PRITCHARD REGIME FOR THE PREVENTION OF CONVULSION IN ECLAMPSIA

Seema Khan[1], Subuhi Nishat[2]

[1]Assistant Professor, Department of Obstetrics and Gynaecology, JIIU,s Indian institute of medical science and research, Warudi, Jalna, India.
[2]Assistant Professor, in IIMSR Badnapur Medical College, India.

Received *: 10/09/2025*
Received in revised form *: 19/10/2025*
Accepted *: 05/11/2025*

Corresponding Author:
Dr. Subuhi Nishat,
Assistant Professor in IIMSR Badnapur Medical College , India.
Email: drsubuhinishat84@gmail.com

DOI: 10.70034/ijmedph.2026.1.543

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2026; 16 (1); 3172-3178

ABSTRACT

Background: Eclampsia is the occurrence of convulsions in a patient with PIH. Eclampsia a dreadful disease of pregnancy has remained a great menace to the pregnant women from the time immemorial. It causes significant mortality and morbidity in the fetus, newborn and the mother. In present study, we aimed to compare the effect of low dose magnesium sulphate verses Pritchard regime for the prevention of convulsion in eclampsia.

Material and Methods: Present study was prospective, comparative study, conducted patients with eclampsia (antepartum or postpartum) irrespective of parity and gestational age. 60 patients of eclampsia, were divided into low dose regime (Group A- 30 patients) and under Pritchard regime (Group B- 30 patients) by simple random sampling.

Results: In the present study most of the patients were between 21 and 25 years (40% in Pritchard regime and 57% in low dose). Eclampsia is more common in Primigravida (47% in Pritchard regime and 70% in low dose). Commonest gestational age at presentation was between 29-36 weeks. Most of the cases were unbooked. There were 2 patients in each group with recurrence of convulsion i:e in low dose group and Pritchard group. Most were induced delivery (70% in Pritchard regime and 59% in low dose). There were no cases of maternal mortality in the present study. Maternal morbidity also was rare in the present study. Most of the babies were preterm. Most babies had birth weight <1500 gram (48% in Pritchard regime & 40% in low dose).

Conclusion: Therapeutic serum magnesium levels were achieved with low dose magnesium sulphate regime even in patients with high BMI. Though there is a significant difference in serum magnesium levels, there is no statistical difference in the control of convulsion between the two groups.

Keyword: Low dose magnesium sulfate regime, Standard Pritchard regime, convulsion, eclampsia.

INTRODUCTION

Pregnancy can induce hypertension in normotensive women or aggravate already existing hypertension. Quality of life for both the mother and newborn rightfully has been our most concern. Maternal complications of severe preeclampsia include eclampsia, abruption placentae, thrombocytopenia, hepatic hemorrhage and rupture, DIC, intra cerebral hemorrhage, cardio pulmonary failure, ARDS, acute renal failure and HELLP syndrome.[1,2]

Eclampsia is the occurrence of convulsions in a patient with PIH. Eclampsia a dreadful disease of pregnancy has remained a great menace to the pregnant women from the time immemorial. It causes significant mortality and morbidity in the fetus, newborn and the mother.[2,3] A clear cut syndrome of preeclampsia nearly always precedes the convulsions, but most obstetricians have seen

eclampsia occur in women who just few hours earlier showed only modest hypertension and no proteinuria. The major breakthrough in the management of eclampsia came when J. A. Pritchard *et al*,[4] published his standardized treatment regime in 1984 using MgSO4. 'Pritchard regime' includes loading dose of magnesium sulphate 4gm I.V and 5gm I.M in each buttock. This is followed by a maintenance dose of 5 gm I.M 4 hourly. Suman P. Sardesai *et al*,[5] have proposed a low dose magnesium sulphate regime consisting of magnesium sulphate 4 gm. I.M/I.V loading dose followed by 2 gm/4 hr. I.M/I.V maintenance dose.[91] In present study, we aimed to compare the effect of low dose magnesium sulphate verses Pritchard regime for the prevention of convulsion in eclampsia.

MATERIAL AND METHODS

Present study was prospective, comparative study, conducted in department of Obstetrics and Gynaecology, at LTMMC & LTMGH, Sion, Mumbai, India. Study duration was of 2 years (Nov 2011 to Oct 2013). Study was approved by institutional ethical committee.

Inclusion Criteria

- Patients with eclampsia (antepartum or postpartum) irrespective of parity and gestational age, relatives willing to participate in present study

Exclusion Criteria

- Patients with convulsions due to causes other than eclampsia
- Referred patients, who received magnesium sulphate loading dose before admission or any other anticonvulsant.
- Patients who presented with complications like cerebrovascular accident, renal failure, aspiration pneumonitis,
- Patients who already in very moribund condition.

60 patients of eclampsia, were divided into low dose regime (Group A- 30 patients) and under Pritchard regime (Group B- 30 patients) by simple random sampling. Before enrolling the patient into the study, patient was explained the type and nature of the study and valid written informed consent was obtained.

A detailed history regarding age, parity, gestational age, number of convulsions, duration of symptoms of pregnancy induced Hypertension, H/o premonitory symptoms were taken from close relatives and also from the patient if she is conscious. Any past history of hypertension (or) renal disease (or) eclampsia in previous pregnancy was elicited.

A through general examination and obstetric examination was made. On general examination, conscious level, degree of edema, anaemia, blood pressure pulse rate, temperature, respiratory rate, cardiovascular system, Respiratory system, fundus examination was done, Blood and urine were sent for all investigations related to eclampsia like Renal functions test, Liver functions, hematological investigations were carried out in all patients. Hourly urine output was measured by an indwelling catheter. Half hourly pulse, temperature and respiratory rate, two hourly blood pressure were taken.

ANTI CONVULSANT LINE OF MANAGEMENT

1. LOW DOSE REGIMEN: (Group A) 4 gram of magnesium sulphate as 20% solution given intravenously slowly over 15 minutes. 2 gram $MgSO_4$ 50% solution given intramuscularly in alternate buttocks, until 24hrs after delivery every 4 hourly as maintenance dose. Monitored with urine output knee jerks, and respiratory rate.

2. PRITCHARD REGIMEN OF MAGNESIUM SULPHATE REGIMEN: (Group B) 4 gram of Magnesium sulphate as a 20% solution intravenously slowly. Follow promptly with 10 gram of 50% Magnesium sulphate solutions 5-gram deep IM in each buttock. 5 gram of 50% solution of magnesium sulphate was given every 4 hours thereafter for 24 hours after delivery or till 24 hours of last convulsion whichever was later.

- If convulsion recurs within 30 min after loading dose, no additional MgSo4 was required
- If convulsion occurs 30 minutes after loading dose, additional 2gms MgSo4 was given IV
- All cases were monitored for evidence of magnesium toxicity.

a) Patellar reflex is Present.
b) Respiratory Rate > 12/min
c) Urine output the previous 1hr exceeded 30ml.

10% calcium gluconate was kept ready to treat any toxicity which could occur. Blood samples were taken after 2 hours of administration of loading dose of magnesium sulphate. Type of convulsions (ante partum / intra partum / postpartum), number of convulsions, therapeutic drug level, maternal complications and perinatal outcome are compared between two groups.

Anti-Hypertensive Line of Management: Control of Hypertension achieved by T. Nifedipine 10 mg thrice daily. Once BP is controlled, after 48 hrs dose was tapered to 5 mg thrice daily. Labetalol, alpha-methyldopa and nitroglycerine were also used according to Blood pressure.

Obstetric Management: After stabilizing the patient, a detailed obstetric examination was done. Mode of termination was planned according to the gestational age, viability of the fetus, and cervical scoring. Patients were induced with prostaglandin E2 gel /Misoprostol and accelerated with ARM and Oxytocin infusion. Caesarean section was done for obstetric indications. After delivery, the patient was observed carefully for 48 – 72 hours in the labour ward and post operative ward and followed up till the discharge of the patient.

Student's t-test is used for numerical data to determine whether an observed difference between the means of two groups can be considered statistically significant. Chi-square test is used to find

out whether observed differences between proportions of events in two groups may be considered statistically significant.

RESULTS

A comparative study of 30 pregnant women of eclampsia treated with low dose MgSO4 regime (Group A) with 30 pregnant patients with eclampsia treated with standard Pritchard regime (Group B) was undertaken. Maximum number of patients belong to the age between 21 and 25 years in both the Groups. (40 % in Group A and 53.3 % in Group B). No statistically significant association was found between age and the groups with p>0.05. (p =0.690).

Majority of our cases were un booked (unregistered unimmunised with no any single or less than 3 visits). Only 4 cases were booked (with at least 3 or more visits) at tertiary care institute in both the groups. Maximum number of patients were primigravida in both the groups (46.6% in Group B and 70 % Group A). Association was insignificant with p >0.05 (p =0.099) Maximum number of patients belonged to gestational age between 29 and 32 weeks in Group B (43.3%),33 and 36 weeks in Group A (40%). No statistically significant association was observed between gestational age and Groups (P=0.116). Body mass index in maximum number of cases in both Groups were between 18.5 and 24.9 (46.7% in Group A & 50% in Group B).No statistically significant association observed with P >0.05.(p=0.661).

Table 1: General characteristics

Characteristics	Group A	Group B	Total	P value
Age				
≤ 20 Yrs	6 (20 %)	7 (23.3 %)	13 (21.7 %)	Chi square test : V= 1.467, df =3, p=.690
21 to 25 Yrs	16 (53.3 %)	12 (40 %)	28 (46.7 %)	
26 to 30 Yrs	4 (13.3 %)	7 (23.3 %)	11 (18.3 %)	
More than 30 Yrs	4 (13.3 %)	4 (13.3 %)	8 (13.3 %)	
Mean ± SD	24.43±4.75	25.13±4.88		
ANC				
Booked	2 (6.7 %)	2 (6.7 %)	4 (6.7 %)	Chi square test= 0.760, df =2, p= 0.6
Unbooked	18 (60 %)	21 (70 %)	39 (65 %)	
Booked outside	10 (33.3 %)	7 (23.3 %)	17 (28.3 %)	
Parity				
Primigravida	21 (70 %)	14 (47.7 %)	35 (58.3 %)	Chi square test : V= 6.282, df =3, p= 0.099
Gravida 2	5 (16.7 %)	12 (40 %)	17 (28.3 %)	
Gravida 3	1 (3.3 %)	3 (10 %)	4 (6.7 %)	
Gravida ≥ 4	3 (10 %)	1 (3.3 %)	4 (6.7 %)	
Gestational age (weeks)				
Up to 28 Wks.	1 (3.3 %)	4 (13.3 %)	5 (8.3 %)	Chi square test : V= 5.916, df =3, p= 0.116
29 to 32 Wks.	7 (23.3 %)	13 (43.3 %)	20 (33.3 %)	
33 to 36 Wk.	12 (40 %)	7 (23.3 %)	19 (31.7 %)	
More than 36 Wks.	10 (33.3 %)	6 (20 %)	16 (26.7 %)	
Mean ± SD	33.86±3.11	33.91±3.52		
Body mass index				
Less than 18.5	0	1 (3.3 %)	1 (1.7 %)	Chi square test :v=1.594,df=3,p=0.661
18.5 to 24.9	14 (46.7 %)	15 (50 %)	29 (48.3 %)	
25 to 29.9	14 (46.7 %)	11 (36.7 %)	25 (41.7 %)	
Above 30	2 (6.7 %)	3 (10 %)	5 (8.3 5)	
Mean ± SD	25.13±3.51	24.95±3.29		

Anaemia & Oligohydramnios were the two most common risk factors in our study. Other risk factors were IUD, IUGR, GDM and twin pregnancy.

Table 2: Risk factors

Risk Factor	Group A	Group B	Total
Anaemia	6 (20 %)	8 (26.7 %)	14 (23.3 %)
GDM	1 (3.3 %)	1 (3.3 %)	2 (3.3 %)
IUD	4 (13.3 %)	3 (10 %)	7 (11.7 %)
IUGR	2 (6.7 %)	1 (3.3 %)	3 (5 %)
Oligohydramnios	5 (16.7 %)	4 (13.3 %)	7 (11.7 %)
Twins	1 (3.3 %)	0	1 (1.7 %)

Chi square test:v=1.594,df=3,p=0.661

Mean systolic Blood Pressure in Group A was164.53 ± 12.57mmHg. Mean systolic Blood Pressure in Group B was 163.53 ± 15.02 mmHg. Association is insignificant as P > 0.05.(P=.356) Mean diastolic Blood Pressure in Group A was 104.27 ± 9.61 mmHg. Mean diastolic Blood Pressure in Group B was 104.67 ± 12.5 mm Hg. Statistically significant association observed between diastolic Blood Pressure and the Groups (P=0.010).

In both groups 96.7% cases had normal fundus. No statistically significant association observed between fundoscopy and the groups with P> 0.05 (P=1). 50% in Group A and 33.3% in Group B had 1 + (0.3gm/l) proteinuria. All patients in our study had significant

proteinuria at the time of admission. No statistically significant association is observed between urine albumin and the groups with P > 0.05 (P=0.128).

Table 3: Blood pressure & proteinuria

Characteristics	Group A	Group B	Total	
Systolic blood pressure (mmHg)				
140 to 159	7 (23.3 %)	7 (23.3 %)	14 (23.3 %)	Chi square test : V=3.243, df =3, p= 0.356
160 to 179	17 (56.7 %)	20 (66.7 %)	37 (61.7 %)	
180 to 199	6 (20 %)	2 (6.7 %)	8	
More than 200	0	1 (3.3 %)	1 (1.7 %)	
Mean ± SD	164.33±12.57	163.53±15.02		
Diastolic blood pressure (mmHg)				
Up to 99	2 (6.7 %)	8 (26.7 %)	10 (16.7 %)	Chi square test=9.168, df=2,p= 0.010
100 to 109	19 (63.3 %)	8 (26.7 %)	27 (45 %)	
More than 110	9 (30 %)	14 (46.7 %)	23 (38.3 %)	
Mean ± SD	104.27±9.61	104.67±12.5		
Fundoscopy				
Normal	29 (96.7 %)	29 (96.7 %)	58 (96.7 %)	Chi square test : V=0.000, df =1, p= 1
Grade 1 hypertensive retinopathy	1 (3.3 %)	1 (3.3 %)	2 (3.3 %)	
Urine Albumin				
1+	15 (50 %)	10 (33.3 %)	25 (41.7 %)	Chi square test: V=4.105,df=2,p=0.128
2+	5 (16.7 %)	12 (40 %)	17 (17.3 %)	
3+	10 (33.3 %)	8 (26.7 %)	18 (30 %)	

Mean serum Mg in Group A was 6.29 ± 0.57 and 4.92 ±0.91 in Group B. No statistically significant association between serum magnesium and the Groups with P>0.05 (P= 0.175)

Table 4: Serum magnesium (mg/dl) after 2hr of loading dose

Serum Mg mg/dL (after 2 hrs. of loading dose)	Group A	Group B	Total	P value
less than 4.8	2 (6.7 %)	6 (20 %)	8 (13.3 %)	Chi square test=.3.490, df=2, p= 0.175
4.8 to 8.4	28 (93.3 %)	23 (76.7 %)	51 (85 %)	
8.5 and above	0	1 (3.3 %)	1 (1.7 %)	
Mean ± SD	6.29±0.57	4.92±0.91		

53.3% in Group A and 40% in Group B were treated with methyldopa and nifedipine (Methyldopa given as 500mg 6hourly). No statistically significant association observed between the use of number and dose of antihypertensive drugs and the groups (P=0.301).

Table 5: Antihypertensive

Characteristics	Group A	Group B	Total	P value
Nifedipine	9 (30 %)	15 (50 %)	24 (40 %)	Chi square test : V=4.871, df =4, p= 0.301
Alpha methyl dopa	4 (13.3 %)	1 (3.3 %)	5 (8.3 %)	
Alpha methyl dopa,Nifedipine	16 (53.3 %)	12 (40 %)	28 (44.4 %)	
Labetalol, Nifedipine	1 (3.3 %)	1 (3.3 %)	2 (3.3 %)	
Nifedipine,Nitroglycerine	0	1 (3.3 %)	1 (1.7 %)	

On obstetric examination majority (90%) of patient had cephalic presentation in each Groups.

Majority of patient in both the Groups had antepartum convulsion (93.3% in Group A and 86.7% in Group B had antepartum convulsion), whereas remaining cases had postpartum onset of convulsion. No statistically significant association observed with P>0.05 (P=0.389). In both Group A (60%) & Group B (76.7%) majority of patient had one convulsion. Maximum number of convulsions in both groups were 6. No statistically significant association observed between number of convulsion and the Groups with P> 0.05 (P=0.621)

Success rate of controlling convulsion in both Group A and Group B was 93.3%. Two patients in both the Groups (Group A and Group B) had recurrence of convulsion 1 hour after loading dose. Recurrence of convulsion in 6.6% (4) cases were controlled by additional 2 gram of 20% magnesium sulphate.

Table 6: Eclampsia Characteristics

Characteristics	Group A	Group B	Total	P value
Type of eclampsia				
Antepartum	28 (93.3 %)	26 (86.7 %)	54 (930 %)	p= 0.389
Postpartum	2 (6.7 %)	4 (13.3 %)	6 (10 %)	

No. of convulsion before treatment				
One (1)	18 (60 %)	23 (76.7 %)	41 (68.7 %)	Chi square test : V=.2.635, df =4, p= 0.621
Two (2)	8 (26.7 %)	5 (16.7 %)	13 (21.7 %)	
Three (3)	2 (6.7 %)	1 (3.3 %)	3 (5 %)	
Four (4)	1 (3.3 %)	0	1 (1.7 %)	
≥Five (5)	1 (3.3 %)	1 (3.3 %)	2 (3.3 %)	
Recurrence of convulsion (after starting MgSO4 regimen)				
No recurrence	28 (93.3 %)	28 (93.3 %)	56 (93.3 %)	Chi square test : V=.1.330, df =2, p= 0.513
One (1)	2 (6.7 %)	1 (3.3 %)	3 (5 %)	
Two (2)	0	1 (3.3 %)	1 (1.7 %)	
Complication of Eclampsia				
Antepartum hemorrhage	1 (3.3 %)	1 (3.3 %)	2 (3.3 %)	Chi square test : V=2.000, df = 5, p= 0.849
Acute renal failure	0	1 (3.3 %)	1 (1.7 %)	
HELLP syndrome	2 (6.7 %)	2 (6.7 %)	4 (6.7 %)	
Hemiparesis	0	1 (3.3 %)	1 (1.7 %)	
Postpartum hemorrhage	4 (13.3 %)	4 (13.3 %)	8 (13.3 %)	
No complications	22 (73.3 %)	22 (73.3 %)	44 (73.3 %)	

In Group A 40 % cases and in Group B 50% cases were induced with cerviprime. In 5 patients, LSCS was done for obstetric indication like primigravida with breech, transverse lie or previous LSCS. Association is insignificant (P=.175)

In Group A 56.7% and 66.7% in Group B were delivered vaginally.Two patients in each group were delivered by forcep application in view of fetal distress. Caesarean section done in 11 cases in Group A and 9 cases in Group B. Four patients in Group A and 1 patient in Group B were directly taken for caesarean delivery without induction for obstetric indication. No statistically significant association is observed between mode of delivery & the groups with P>0.05 (P=0.6997).

Table 7: Mode of delivery

Characteristics	Group A	Group B	Total	P value
Presentation				
Breech	2 (6.7 %)	2 (6.7 %)	4 (6.7 %)	
Cephalic	27 (90.0 %)	27 (90.0 %)	54 (90.0 %)	
Transverse lie	0	1 (3.3 %)	1 (1.7 %)	
Method of induction / augmentation				
Cerviprime	12 (40 %)	15 (50 %)	27 (45 %)	Chi square test : V=.3.490, df =2, p= 0.175
Misoprostol	8 (26.7 %)	11 (36.7 %)	19 (31.7 %)	
Oxytocin	12 (40 %)	3 (10 %)	9 (13.3 %)	
No induction	4 (13.3 %)	1 (3.3 %)	5 (8.3 %)	
Mode of delivery				
Vaginal	17 (56.7 %)	19 (66.7 %)	36 (61.7 %)	
Forcep	2 (6.7 %)	2 (6.7 %)	4 (6.7 %)	
Emergency LSCS	11 (36.7 %)	9 (30 %)	20 (33.3 %)	
Indication of LSCS				
Abruption	2 (18.2 %)	0	2 (10 %)	Chi square test : V=.0.717, df =2, p= 0.699
Breech	1 (9.1 %)	0	1 (5 %)	
Failed induction	1 (9.1 %)	2 (18.2 %)	3 (15 %)	
Fetal Distress	3	3 (33.3 %)	6 (30 %)	
Non-Progress Of Labour	2 (18.2 %)	3 (33.3 %)	5 (25 %)	
Prev LSCS with eclampsia	1 (9.1 %)	0	1 (5 %)	
Transverse lie	0	1 (9.1 %)	1 (5 %)	
Twins with 1stbreech	1 (9.1 %)	0	1 (5 %)	

Hyporeflexia in one patient was observed in Group B. None of our patients developed Injection abscess, respiratory depression or arrhythmias.

Table 8: Adverse effects

Characteristics	Group A	Group B
Hyporeflexia	0	1 (3.3 %)

In each Group A and group B 16.7% were still birth. Eight patients in both groups had Intrauterine death out which 5 were macerated still birth, 3 were fresh still birth. Majority of babies in group B had respiratory distress due to magnesium related toxicity and were admitted in NICU. Remaining was admitted in NICU for hyperbilirubinemia, septicemia, prematurity and necrotizing enterocolitis. Most of babies had a birth weight < 1500gms i:e preterm (40% in Group A and 46.7% in Group B regime).

Table 9: Fetal outcome

Characteristics	Group A	Group B
Fetal outcome		
Stillbirth	5 (16.7 %)	5 (16.7 %)
Intrauterine death	4 (13.3 %)	4 (13.3 %)
Live birth	21 (70 %)	21 (70 %)
NICU admission		
Respiratory distress syndrome	2 (6.7 %)	7 (23.3 %)
Septicemia	4 (13.3 %)	2 (6.7 %)
Hyperbilirubinemia	9 (30 %)	7 (23.3 %)
Necrotizing enterocolitis	2 (6.7 %)	1 (3.3 %)
Birth weight (in grams)		
Less than 1500	12 (38.7 %)	14 (46.7 %)
1501 to 2000	6 (19.35 %)	9 (30 %)
2001 to 2500	7 (22.58 %)	4 (13.3 %)
Above 2501	6 (19.35 %)	3 (10 %)

DISCUSSION

Pre-eclampsia, a multisystem disorder of pregnancy associated with raised blood pressure and proteinuria, complicates 2-8% of pregnancies.[6] Although outcome is often good, pre-eclampsia is a major cause of morbidity and mortality for the women and her child.[7] Pre-eclampsia and eclampsia probably account for more than 50,000 maternal deaths a year.[8] In India prevalence of eclampsia ranges from 1 in 30 to1 in 500 pregnancies and incidence of eclampsia as high as 4.6 % of all deliveries. For decades anticonvulsant drugs have been given to women with pre-eclampsia, in the belief that they reduce the risk of seizure. Magnesium sulphate is now the drug of choice for women with eclampsia, with strong evidence that it is better than diazepam[9], phenytoin,[9] or lytic cocktail.[10]

Since the introduction of Pritchard regime of magnesium sulphate there has been a constant discussion regarding the dose of Magnesium sulphate and therapeutic serum Magnesium levels. Winit phuapradit *et al*,[11] and Andrea witlin[12] thought that Magnesium sulphate dosing should vary according to the patients' weights or body mass index. Based on these observations various low dose regimens have been introduced in Asian countries.

In present study, all the patients were aged between 19 and 40 years. The mean age was 24.43± 4.75 years. In Gaddi Suman study,[13] the mean age was 19.5 years (range 17-36 years). In Sardesai *et al*,[5] study the mean age was 22.2 years with age range of 18-36 years. In primigravida, due to first time exposure to chorionic villi eclampsia is more common. Most of our patients were primigravida. This is in accordance with studies like Niraj N. Mahajan (Padhar regime),[14] Begum. R (Dhaka regime),[15] Suman P. Sardesai,[5] & Gaddi Suman.[93] Eclampsia is most common in the last trimester and increasingly more frequent as term approaches· The commonest gestational age at presentation was between 29-36 weeks. This is comparable with Shikha Seth study[16] where mean gestational age at presentation was 34.1 ± 3.4 weeks in low dose group and 34.5± 3.4 weeks in high dose group.

Most of our patients had BMI between 18.5 and 24.9 (46.7% in Low dose regime and 50% in Pritchard regime). The mean BMI in Low dose regime is 25.13 ± 3.51. The mean BMI in Pritchard regime is 24.95±3.29. The mean BMI in Sardesai study,[5] were 20.45 ± 3.14 and 21.36 ± 2.55 in low dose group and high dose group respectively.

Studies on pharmacokinetics of Mg in pregnant women have shown that therapeutic levels are attained 6 hours after beginning infusion at rate of 2 gm/ hour. A loading dose of 4 g I.V. is usually given because 6 hours is a long time to wait for therapeutic depression of the CNS. The loading dose raises the Mg level to high range of therapeutic level almost immediately; the effect lasts approximately 1 hour, and then Mg level returns to the low end of the therapeutic range. Based on these observations we collected our samples at 2 hours after administration of loading dose. The range of serum magnesium levels was 3.4 to 8.5 mg/dl with mean values of 6.29± 0.57 mg/dL (for all the samples in low dose group) in our study. Begum *et al.*,[15] reported the range of serum Mg levels as 1.74 to 6 mg/dL with mean values of 3.87 ± 0.78 mg/dL. In each group 2(6.7%) patient had recurrence of convulsion. Sardesai *et al*,[5] had reported 8% recurrent convulsion rate. Begum *et al0*,[15] reported 3.9% recurrent convulsion rate.

Though there is a significant difference in serum magnesium levels, there is no statistical difference in the control of convulsions between the two groups. Even though serum Mg level crossed therapeutic range in a few occasions, this was not associated with any complications in our study. This may be due to the fact that serum level is an insensitive indicator of the tissue magnesium level. Serum magnesium levels were well below the levels required to produce magnesium toxicity. Thus, low dose regime was found to be safe regarding the risk of hypermagnesemia. Begum R *et al*,[15] reported that four (9%) patients had diminished knee jerks 6, 10, 12 and 15 hours after administration of the loading dose, but at those times the serum magnesium levels were 3.2 mg/dl, 3.8/dl, 3.4 mg/dl and 3.3 mg/dl respectively.

Onset of convulsion to admission in hospital also plays an important part in controlling convulsion as

prompt referral and improved transport facilities, the deficiency of which were responsible for high incidence of complication in earlier days.

There were no cases of maternal mortality in the present study. The reported maternal mortality ranges from 0.4% to 14% depending on the condition of women on admission and hospital facilities. Pritchard *et al*,[4] reported only one maternal death (0.4% maternal mortality) among 245 women with eclampsia. Sardesai *et al*,[5] had reported 2.6% maternal mortality in her study with the low dose regimen in 60 eclampsia cases. Begum *et al*,[15] had reported maternal mortality of 4.5% and 5.0% in low dose and Pritchard regimens, respectively.

Low dose Magnesium sulphate regimens were not associated with any Magnesium toxicity. Both regimens are equally safe for both the mother and fetus and do not affect the obstetric outcome. Low dose magnesium sulfate regimen is safe and effective and can be offered as an alternative to high dose magnesium sulfate regime in the for mother management of eclampsia. A continued study with low dose $MgSO_4$ regimen in a large number of patients is required to further assess whether it can replace the standard high dose regime in Indian population for the control of convulsion in eclampsia. From the present study and with the comparison of various magnesium sulphates regime shows that low dose regime was found to be safe regarding the risk of hypermagnesemia The maternal and perinatal mortality in the present study were comparable to those of standard Pritchard regime

CONCLUSION

Low dose magnesium sulfate regime is equally effective as Standard Pritchard regime in controlling convulsion and preventing recurrent convulsion in eclampsia with less requirement of drug. Therapeutic serum magnesium levels were achieved with low dose magnesium sulphate regime even in patients with high BMI. Though there is a significant difference in serum magnesium levels, there is no statistical difference in the control of convulsion between the two groups.

Conflict of Interest: None to declare

Source of funding: Nil

REFERENCES

1. Magpie Trial Collaboration Group. Do women with pre-eclampsia, and their babies, benefit from magnesium sulphate? The Magpie Trial: randomized placebo-controlled trial. Lancet 2002; 359: 1877-90.
2. Konje JC, Obisesan KA, Odukoya OA *et al.* Presentation and management of eclampsia. Int. J Gynecol Obstet. 1992; 38: 31-35.
3. Swain S, Ojha K N, Prakash A *et al.* Maternal and perinatal mortality due to eclampsia. Indian pediatr 1993 Jun; 30(6): 771-773.
4. Jack A. Pritchard, Cunningham G *et al.* The Parkland Memorial Hospital Protocol for treatment of eclampsia: Evaluation of 245 cases. Am. J. Obstet Gynacol 1984; 148: 951-63.
5. Sardesai Suman, Maira Shivanjali Patil Ajit, Patil Uday. Low Dose Magnesium Sulphate Therapy for Eclampsia and imminent pre eclampsia: Regime Tailored for Indian Women. Jr. Obst & Gyn India 2003; 53: 540-546.
6. WHO. WHO International Collaborative Study of Hypertensive Disorders of Pregnancy. Geographic variation in the incidence of hypertension in pregnancy. Am J Obstet Gynecol 1988; 158: 80-83.
7. Bergstrom S, Povey G, Songane F, Ching C. Seasonal incidence of eclampsia, its relationship to meteorological data in Mozambique. J. Perinat Med 1992; 20: 153-58.
8. WHO, UNICEF. Revised 1990 estimates of maternal mortality: WHO/FRH/MSM/96.11. Geneva: WHO, 1996.
9. Anonymous. Which anticonvulsant for women with eclampsia? Evidence from the Collaborative Eclampsia Trial. Lancet 1995; 345: 1455-63.
10. Duley, L. and Gulmezoglu, A. M. Magnesium sulphate versus lytic cocktail for eclampsia (Cochrane Review). Cochrane Database Syst. 2001,Rev., 1, CD002960.
11. Phuapradit W, Saropala N, Haruvasin S, Thuvasethakul P. serum level of magnesium attained in magnesium sulfate therapy for severe preeclampsia. Asia Oceania J. Obstet Gynaecol. 1993 Dec; 19(4): 387-90.
12. Witlin Andrea, Prevention and Treatment of eclamptic convulsions, Clinical Obstet and Gyn. 1999; 42: 16-24.
13. Gaddi Suman S, Somegowda. Maternal and perinatal outcome in eclampsia in a district hospital J Obstet Gynecol India 2007; 57: 324-326.
14. Mahajan NN, Thomas A, Soni RN, Gaikwad NL, Jain SM. 'Padhar Regime' – A Low – Dose Magnesium Sulphate Treatment for Eclampsia. Gynecol Obstet Invest. 2008; 30: 20-24.
15. Begum R. A low dose (Dhaka) Magnesium Sulphate regime for eclampsia. Acta Obstericia et Gynaecologica Scandinavia 2004; 80: 998-1002.
16. Shikha seth, Arun nagrath, Dinesh kumar singh. Comparison of low dose, single loading dose, and standard Pritchard regimen of magnesium sulfate in antepartum eclampsia; Anatol J Obstet Gynecol 2010; 1: 1-6.