International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Goudar V et al. Int J Reprod Contracept Obstet Gynecol. 2017 Jul;6(7):3058-3061
www.ijrcog.org

pISSN 2320-1770 | eISSN 2320-1789

DOI: http://dx.doi.org/10.18203/2320-1770.ijrcog20172934

Original Research Article

Efficiency and safety of single dose Magnesium sulphate in eclamptic convulsion

Vinaya Goudar[1]*, Rashmi Naganagoudaru[2]

[1]Department of Obstetrics and Gynecology, Koppal Institute of Medical Sciences, Koppal, Karnataka, India
[2]Department of Obstetrics and Gynecology, Raichur Institute of Medical sciences, Raichur, Karnataka, India

Received: 05 May 2017
Accepted: 29 May 2017

***Correspondence:**
Dr. Vinaya Goudar,
E-mail: vinigururajnayak@gmail.com

ABSTRACT

Background: An acute and life-threatening complication of pregnancy is characterized by the appearance of tonic clonic seizures, in a patient with pre-eclampsia. Objective of the study was to study the efficacy and safety of a 'single dose' of magnesium sulphate in treatment of eclamptic convulsions.
Methods: The present prospective study was undertaken among women aged between 18-35 years outpatient's Department of gynecology in Karnataka Institute of Medical Sciences (KIMS) Hubli, Karnataka, India. The study was undertaken during December 2009 to November 2010.
Results: The incidence of eclampsia in our study was 2.12%. Eclapmsia is more common in patients from rural (89%) as compared to urban areas (11%) in our study. In our study eclampsia is more common in unbooked cases (80%). Majority of patients (72%) in our study group were illiterates. 61%, 28% of patients had antepartum and intrapartum eclampsia respectively in our study. We had only 11 post-partum convulsions Table 2. 80% of patients in our study were more than 28 weeks of gestations. 65% of the patients had <5 episodes of convulsions. The number of convulsions did not affect the recurrence, and 35% had >5 episodes. In present study 5 Patients had Systolic Blood Pressure less than 140 mmHg. Majority (52) had more than 160 mmHg 42 had in between 140 and 160 mmHg. Diastolic arterial pressure was >110 in 81% of cases. The convulsions were controlled in 75% of women. Recurrence of convulsions occurred in 25% of women after receiving the single dose magnesium sulphate regime. In our study 75% of cases, there was no recurrence of convulsions and in 25% of cases, there was recurrence of convulsions, out of which 20 cases received low dose magnesium sulphate regime and the other 5 cases received Phenytoin regime as 2nd line of treatment.
Conclusions: Hence the single dose Magnesium sulphate is safe and effective in controlling convulsions.

Keywords: Convulsion, Eclapmsia, Magnesium sulphate regime

INTRODUCTION

An acute and life-threatening complication of pregnancy is characterized by the appearance of tonic clonic seizures, in a patient with pre-eclampsia.[1] It is estimated to complicate 1in 2000 deliveries in developed countries and from 1 in 100 to 1 in 1,700 deliveries in developing countries.[2] Eclampsia accounts for 50,000 maternal deaths a year worldwide. The maternal case fatality rate is 1.8% and 35% of eclamptics will have one major complication.[3] The perinatal mortality rate in developing countries is as high as 80 (or) more per 1000 births. Magnesium sulphate was first used in the treatment of puerperal eclampsia in 1925. Pritchard (1955) published his initial experience with magnesium sulphate in the treatment of eclampsia.[4] The first two randomized trials of anticonvulsant treatment in eclampsia were published in 1990. The Collaborative Eclampsia Trial (CET)

involving 1687 women with eclampsia in the year 1995 provides compelling evidence that magnesium sulphate reduces the risk of recurrent seizures as compared with diazepam and phenytoin and also less maternal and neonatal morbidity than the other agents.[5] Pritchard suggested that the dose of magnesium should be limited in women who are known to be or appear to be small.[6] With this in mind the dose of regime of magnesium sulphate modified and a standardized protocol has been formulated to suit our Indian women who weight much less than counterpart in western world.

A Prospective study included 100 patients receiving single dose of magnesium sulphate therapy at Karnataka institute of medical sciences, Hubli from Dec 2009 to Nov 2010

The loading dose (4gm IV and 4 gm IM) of single dose regimen was significantly less than standard Pritchard regimen and other regimens, with this regimen the maternal mortality rate and perinatal mortality fallen dramatically. The objective of study was to study the efficacy and safety of a 'single dose' of magnesium sulphate in treatment of eclamptic convulsions.

METHODS

The present prospective study was undertaken among women aged between 18-35 years outpatient's Department of gynecology in Karnataka Institute of Medical Sciences (KIMS) Hubli, Karnataka, India. The study was undertaken during December 2009 to November 2010. Permission for the study was obtained from the College authorities prior to commencement.

Sample Size was 100 cases of Eclampsia between 20-42 weeks of pregnancy were taken in the study.

Inclusion criteria

All proved cases of eclampsia.

Exclusion criteria

Known epileptics, Patients who are put on other regimes and Eclamptic patients below 20 weeks and above 42 weeks.

Data collection

The objectives and methodology of the study were explained to those women who were included in the study. Apparently 100 women of those aged between 18-35 years who voluntarily willing for the examination were taken in this study. Willing patients were enrolled into the study information has obtained us for the proforma.

A detailed history regarding age, parity, gestational age, number of convulsions, duration of symptoms of pregnancy induced Hypertension, H/0 imminent symptoms were taken from close relatives and also from the patient if she is conscious (or) taken retrospectively from her. Any past history of hypertension (or) renal disease (or) eclampsia in previous pregnancy was elicited.

A thorough general examination and obstetric examination were made. On general examination, conscious level, degree of edema, anaemia, pulse rate, temperature, respiratory rate, blood pressure, cardiovascular system, respiratory system, fundus examination was done. Blood and urine were sent for all investigations related to eclampsia like renal function tests, liver function tests, haematological tests and coagulation screening tests were carried out in all patients. A life line was established and the Regimen was started. Pulse, Blood pressure, Respiratory rate, Oxygen saturation monitored for every 30 minutes, Knee jerk and urine output every half hourly.

Anti-convulsant line of management

Women admitted to eclampsia labour room is given loading dose of 4gm of 50% IV magnesium sulphate diluted in 20cc of 5% of dextrose over 10-15 minutes, simultaneously 4gm of magnesium sulphate. Intramuscularly, 2gm on each buttock was administered.

The patient is monitored with Adequate anti hypertensives, hydration and immediate termination of Pregnancy. If the convulsions are not controlled even after 30 minutes of giving single dose magnesium sulphate, then it is switched over to other regimes like low dose magnesium sulphate and Phenytoin regime. Control of hypertension is achieved by Tab. Nifibipine 10mg Thrice day maximum of 120mg in conscious patients and injection lebetalol 20mg IV maximum of 300mg in unconscious patients.

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 the cervical scoring.

Patients were induced with prostaglandin E1 and accelerated with Oxytocin infusion. Cesarean section was done for obstetric indications (or) for failed induction. After delivery, the patient was observed carefully for 48-72 hours in the labour ward and post-operative ward and followed up until the discharge of the patient.

Outcome measures

Primary outcome measures were recurrence of fits, safety and efficacy after starting the treatment in single dose regime.

Stastical analysis

Data collected was entered in Microsoft Office Excel and analyzed by using SPSS version 13.0. Dependent variable frequencies, percentage, were calculated.

RESULTS

The present study about the efficacy and safety of Single dose magnesium sulphate in eclampsia patients. This study consists of 100 cases of eclampsia admitted to Karnataka Institute of Health Sciences, Hubli, Karnataka, India from December 2009 to November 2010. Majority of patients belong to lower socio-economic status, majority of them were Hindus. Total no of deliveries during December 2009 to November 2010 were conducted 8100. Among total deliveries there were 172 eclampsia cases. The incidence of eclampsia in our study was 2.12% (Table 1).

Table 1: Incidence of eclampsia.

Total no of deliveries	8100
Total no of eclampsia cases	172
Incidence of eclampsia	2.12

Eclapmsia is more common in patients from rural (89%) as compared to urban areas (11%) in our study. In our study eclampsia is more common in unbooked cases (80%). Out of 20 booked cases 16 cases were booked outside KIMS and 4 patients were booked at KIMS. Majority of patients (72%) in our study group were illiterates. In our study eclampsia is more common in women aged 25 years or below (80%) and there is decrease in incidence in women aged 26 yrs or more. 75% of patients encountered in this study were primigravidas (Table 2).

Table 2: Relation with parity.

Parity	No. of cases	%
P0	75	75
P1	16	16
P2	8	8
P3	1	1

61%, 28% of patients had antepartum and intrapartum eclampsia respectively in our study. We had only 11 post-partum convulsions (Table 3).

Table 3: Type of eclampsia.

Type of eclampsia	No. of cases	%
Antepartum	61	61
Intrapartum	28	28
Postpartum	11	11

80% of patients in our study were more than 28 weeks of gestations. 45 cases were conscious at the time of admission. 6 patients were unconscious at the time of admission. 65% of the patients had <5 episodes of convulsions. The number of convulsions did not affect the recurrence, and 35% had >5 episodes

Convulsions to treatment interval was 6 hrs in 74% of cases and more than 6 hours in 26% cases. Which shows the precious time was wasted instead they could have received treatment at peripheral centre only. In present study 5 Patients had Systolic Blood Pressure less than 140 mmHg. Majority (52) had more than 160 mmHg 42 had in between 140 and 160 mmHg. Diastolic arterial pressure was >110 in 81% of cases. This showed that control of blood pressure is an important step in management of eclampsia. The convulsions were controlled in 75% of women.

Recurrence of convulsions occurred in 25% of women after receiving the single dose magnesium sulphate regime. In our study 75% of cases, there was no recurrence of convulsions and in 25% of cases, there was recurrence of convulsions, out of which 20 cases received low dose MgSO4 regime and the other 5 cases received Phenytoin regime as 2nd line of treatment (Table 4).

Table 4: Recurrence of convulsions (2nd line of treatment).

2nd line treatment	No of cases	%
Low dose magnesium sulphate	20	20
Phenytoin	5	5

DISCUSSION

Incidence of eclampsia in our study was 2.12% (Table 1). The incidence of eclampsia varies from country to country and from zone to zone in the same country, poor antenatal care, low socio-economic status and illiteracy are responsible for higher incidence of eclampsia.[8-9]

Table 5: Comparative incidence of eclampsia reported by different authors in India.

Authors	Year	Incidence in %
Goswami et al	1983	4.62
Sonyal MK et al	1987	2.69
Bhattacharya PK	1992	0.7
Swain	1992	2.2
Present study	2009-10	2.12

In present study, the incidence of eclampsia is highest in the younger age group. The incidence of eclampsia in the age group less than 25 yrs was 80%**.** This is comparable to study by Nobis PN (1988) women aged <25 yrs was 84.16.[10] Incidence of eclampsia in un registered cases was 80% and in registered cases it was 20%. Cause of difference in incidence of eclampsia between the two groups may be due to early diagnosis and prompt treatment in registered cases, timely admission and early intervention. Majority of patients in our study were primigravidas. They constituted 75% of patients. In study

of Gun et al 1980, incidence of eclampsia in primigravida was 67.57%. In study by Dutta incidence of eclampsia in primigravida was 88.2%.[11]

61% of patients had antepartum eclampsia. 28% of patients had intrapartum eclampsia. He reported that 44% had AP eclampsia, 33% had IP and 23% had PP eclampsia. According to Arias F the incidence of AP eclampsia is 46.3%, IP16.4% and IP-37.3%.[12] Katz et al reported 53% AP, 36%, IP and 11% PP cases. 65% of the patients had <5 episodes of convulsions. The number of convulsions did not affect the recurrence, and 35% had >5 episodes. In study by Dutta GP and Swain et al as the number of convulsions increases maternal mortality and perinatal mortality increases.[9] In the present study, majority of patients had diastolic blood pressure more than 110. In Collaborative Eclampsia Trial Group study (1995) 53% had a diastolic blood pressure above or equal to 110 mm Hg.[13]

In 75% of cases, there was no recurrence of convulsions and in 25% of cases; there was recurrence of convulsions after receiving the single dose regime. The serum $MgSO_4$ could not be estimated in these cases as we had no laboratory facility to estimate in our set up so we could not estimate whether the $MgSO_4$ levels were in therapeutic range or not. Safe monitoring was achieved without serum magnesium measurement using simple clinical assessment of tendon reflexes, respiratory rate and urine output. None of the patients had adverse effect of magnesium sulphate toxicity.

CONCLUSION

This study reveals that Magnesium Sulphate is the anticonvulsant drug of choice in women with eclampsia. This regime promises efficacy, reliability, ease of administration (phenytoin needs cardiac monitoring), easy nursing, predictable duration of action, wide safety margin, early availability, cheaper relatively less toxic and needs no serum monitoring. Hence the single dose Magnesium sulphate is safe and effective in controlling convulsions. Hence this study encourages to undertake large trials to prove its efficacy and safety.

ACKNOWLEDGMENTS

Authors would like to thank the participants for their co-operation and for their immense faith they reposed.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Sibai BM. Diagnosis, prevention, and management of eclampsia. Obstet Gynecol. 2005;105(2):402-10.
2. Duley L. Pre-eclampsia and the hypertensive disorders of pregnancy. Br Med J. 2003;67:161.
3. Sibai BM, Taslimi M, Abdella TN. Maternal and perinatal out-come of severe pre-eclampsia in midtrimester. Am J Obstet Gynecol. 1985;152:32.
4. Pritchard JA, Cunningham FG, Pritchard SA. The Parkland Memorial Hospital protocol for treatment of eclampsia: Evaluation of 245 cases. Am J Obstet Gynecol. 1984;148:951.
5. Group TE. Which anticonvulsant for women with eclampsia? Evidence from the Collaborative Eclampsia Trial. Lancet. 1995;345(8963):1455-63.
6. Pritchard JA. The Park land memorial hospital, protocol for treatment for eclampsia: Evaluation of 245 cases. Am J Obstet Gynecol. 1984:148:951-63.
7. Sanyal MK, Bhattacharya A, Pattanayak K. A clinical review of eclampsia in rural medical college of West Bengal. J Obstet Gynaecol India. 1987;37:797.
8. Bhattacharya PK, Purkayastha S, Basu M, Mandal R. Caesarean Section in Eclampsia: Still a dilemma analysis of 314 cases. J Obstet Gynecol. 1992;42(1):51.
9. Swain S. Maternal and perinatal mortality due to Eclampsia. J Indian Paediatr. 1993;30(6);771-3.
10. Nobis PN. Perinatal Mortality in eclampsia. J Obstet Gynecol India. 1998;38:38-42.
11. Dutta DC. Text book of Obstetrics. 3rd Edition; 1992.
12. Fernando A. High risk pregnancy and delivery. 2ndEd; 1993.

Cite this article as: Goudar V, Naganagoudaru R. Efficiency and safety of single dose Magnesium sulphate in eclamptic convulsion. Int J Reprod Contracept Obstet Gynecol 2017;6:3058-61.