

**Analysis of Role of Single Dose Magnesium Sulphate in Cases of Severe Pre-Eclampsia in A Tertiary Care Centre**Shanti Snehlata<sup>1</sup>, Sadhna Kumari<sup>2</sup>, Raj Rani Choudhary<sup>3</sup><sup>1</sup>Assistant Professor, Department of Obs & Gynae, Nalanda Medical College & Hospital, Patna, Bihar<sup>2</sup>Senior Resident, Department of Obs & Gynae, Nalanda Medical College & Hospital, Patna, Bihar<sup>3</sup>Associate Professor, Department of Obs & Gynae, Nalanda Medical College & Hospital, Patna, Bihar

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Corresponding author: Dr. Shanti Snehlata

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**Abstract:****Background:** Preeclampsia is a pregnancy specific multi-organ disease process characterized by de novo development of hypertension and proteinuria after 20 weeks of gestation. It complicates 2-8 % of pregnancies.**Aims and Objective:** To study the effect of single dose magnesium sulphate in cases of severe preeclampsia to reduce the incidence of seizures. The ultimate aim is to reduce maternal mortality and morbidity and improve perinatal outcome.**Material and Methods:** In this study total 100 patients with severe preeclampsia were selected and were divided in two groups, study group and control group. Each group had 50 patients with severe preeclampsia. Study group received Prophylactic dose of Magnesium Sulphate that is, 4 gm intravenous MgSO<sub>4</sub> (20%) on admission. The control group was not given prophylactic MgSO<sub>4</sub>. Monitoring of BP, urine output, respiratory rate and FHS was done.**Result:** We had one case of seizure in study group 6 hours after giving prophylactic dose of MgSO<sub>4</sub> which was further managed with Prichard's regime. In the control group seven (7) patients had seizures. There was no case of MgSO<sub>4</sub> toxicity seen. There was no case of maternal deaths and postpartum convulsions in both the group.**Conclusion:** A single loading dose of magnesium sulphate is very effective in preventing eclampsia. It will help to reduce maternal mortality and morbidity and improve perinatal outcome.**Keywords:** Magnesium Sulphate (MgSO<sub>4</sub>), Neonatal intensive care unit (NICU), Liver function test(LFT), Renal function test (RFT).

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**Introduction**

Pre-eclampsia is a multisystem disorder specific to pregnancy and puerperium, which manifests by onset of hypertension and proteinuria after 20 weeks of gestation and resolves by 12 weeks postpartum [4]. Hypertension is one of the commonest medical complications during pregnancy. It is a leading cause of maternal and perinatal mortality.

The incidence of hypertensive disorder of pregnancy is rising due to late marriage, late pregnancy, obesity, lack of physical activity, excessive weight gain during pregnancy on the other hand incidence of eclampsia is declining in the developed countries due to early diagnosis and management of pre-eclampsia due to better antenatal care. Pre-eclampsia can be mild and severe however apparently mild disease may progress to severe. Severe pre-eclampsia may have one or more of the following features-severe hypertension (BP more than or equal to 160/110 mm of Hg), Proteinuria 3+ or more in random

sample or >5 gm /24 hours, headache, visual disturbances, upper abdominal pain, oliguria<500ml in 24 hours, Thrombocytopenia (platelet <100000cells/cmm) etc. [4] Pre-eclampsia is an unpredictable disorder whose only definitive cure is termination of pregnancy. The aim of management is to keep BP below 160/110 mm of Hg. Eclampsia prophylaxis is instituted in women with severe pre-eclampsia to improve maternal and perinatal outcome. MgSO<sub>4</sub> has an important role in Eclampsia prophylaxis.[3] The results of recent randomized trials revealed that magnesium sulfate is superior to placebo or no treatment for prevention of convulsions in women with severe preeclampsia. Single dose of MgSO<sub>4</sub> is very effective in preventing seizures, has minimal chances of MgSO<sub>4</sub> toxicity and requires less monitoring.

## Material and Methods

The study was conducted in the Department of Obs & Gynae, Nalanda Medical College & Hospital Patna from May 2022 to April 2023. In this study total 100 patients with severe preeclampsia were selected and were randomly divided in two groups, study group and control group. Each group had 50 patients with severe preeclampsia.

Study group received Prophylactic dose of Magnesium Sulphate that is, 4 gm intravenous MgSO<sub>4</sub> (20%) on admission which was prepared by diluting in 10 ml normal saline and was given intravenously slowly over 10-12 minutes with strict monitoring. The control group was not given prophylactic MgSO<sub>4</sub>. Monitoring of BP, urine output, respiratory rate and FHS was done. Detailed history, clinical examination and investigations (complete blood count, urine

analysis for albumin, LFT, RFT, Serum LDH, Coagulation profile, obstetric ultrasound with colour Doppler). Daily BP, urine output, urine for albumin and FHS were strictly measured. Patients with chronic hypertension and those with pre-existing renal compromise were excluded from the study.

## Result

It was observed that most of the patients were primigravida (42% in cases and 48% in control). There were 3 cases of PPH in study group and 2 cases in control group. In the study group only one patient had convulsion whereas 7 patients had convulsion in control group.

Eight babies were admitted in NICU who had received prophylactic dose of MgSO<sub>4</sub> whereas 13 babies had NICU admission in those who did not received prophylactic dose of MgSO<sub>4</sub>.

**Table 1: Complications**

	Received MgSO <sub>4</sub>	Did not receive MgSO <sub>4</sub>	P value
convulsion	01	07	0.027
atonic PPH	03	02	0.650
mortality	00	00	

As shown in the table no. 1, there were 3 cases of PPH in study group and 2 cases in control group. In the study group only one patient had convulsion whereas 7 patients had convulsion in control group.

**Table 2: Neonatal Outcome**

	Received MgSO <sub>4</sub>	Did not receive MgSO <sub>4</sub>
NICU	08	13
FSB	02	04

As the above table no. 2 shows eight babies were admitted in NICU who had received prophylactic dose of MgSO<sub>4</sub> whereas 13 babies had NICU admission in those who did not received prophylactic dose of MgSO<sub>4</sub>.

## Discussion

Magnesium sulphate is effective drug for seizure prophylaxis in patients of severe pre-eclampsia. [3] The Magnesium Sulfate for Prevention of Eclampsia Trial (Magpie trial) published in 2002 was a large, multicentre trial comparing magnesium sulfate therapy versus placebo in patients with known preeclampsia who were either in labour or recently delivered but still hospitalized.

From: Anesthesiology Clinics, 2013

World over different regimes are being used. Our study consisted of using lowest dose of magnesium sulphate to have maximum benefits with least toxicity. The primary objective of our study was to prevent or reduce the rate of eclampsia with least toxicity. The secondary benefit of this drug was to reduce maternal and perinatal mortality and morbidity. There are different studies following different regimens for the administration of magnesium sulphate. Various trials have been

adopted different routes, dosage and time to start therapy.

Among the trials using intravenous regime, the loading dose ranged from 4-6 gm and the maintenance dose ranged from 1-2g/hour (Coetzee et al, Belfort et al, Shah R and Mehandale SS). In our study we gave 50 patients with BP >160/100, 4 gm single dose intravenous MgSO<sub>4</sub> on admission which was prepared by diluting in 10 ml normal saline and was given over 10-12 minutes slowly.

In the [3] magpie trial the incidence of seizures in patients of severe preeclampsia including those with impending eclampsia (n = 2174) receiving the placebo was 3.12%. This risk was reduced to 1.09% in patients of severe preeclampsia including those with impending eclampsia (n = 2107) who were given magnesium sulphate. The trial concluded that there was a reduction of 58% in the risk of occurrence of seizures regardless of the severity of the disease by using magnesium sulphate. The trial by Coetzee et al included 822 randomized women, there were no cases of eclampsia seen when magnesium sulphate prophylaxis was used in severe preeclampsia cases. In a similar study [2] comparing single dose versus modified Pritchard regimen they observed that the

rate of convulsions was equal in both the groups with minimum adverse effects with low dose.

A study conducted by Shah and Mehendale concluded that single loading dose of magnesium sulphate in severe pre-eclampsia is effective in preventing eclampsia in 97% cases. In present study, we have 1 case of seizure after 8 hours of giving loading dose, which was changed to [6] Pritchards regimen for further management whereas 7 patients had in the control groups. There were no cases of magnesium toxicity seen. There were no cases of maternal deaths and postpartum convulsions.

The limitation of this study was sample size was small so further studies are warranted to know efficacy of the drug.

### Conclusion

A single dose magnesium sulphate can be used in cases of severe preeclampsia to reduce the incidence of seizures especially in a resource poor country like ours as it requires less monitoring. This single dose MgSO<sub>4</sub> in cases of severe pre-eclampsia can help to reduce maternal mortality and morbidity and improve perinatal outcome.

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