

RECURRENT SEIZURES IN PATIENTS SEEKING LOADING DOSE OF  $MgSO_4$  IN  
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## ABSTRACT

**Background:** Hypertensive disorders such as eclampsia is significant contributor to maternal and perinatal mortality and morbidity worldwide particularly in the developing countries. This study was done to determine the frequency of recurrent seizures in patients seeking loading dose of  $MgSO_4$  only in eclampsia. **Materials & Method:** Pregnant ladies (n = 114) of any parity, 15-35 years old having more than 20 weeks gestational amenorrhea from last menstrual period were included in our study. Patients admitted with eclampsia were examined for recurrent seizures. Frequency of recurrent seizures with loading dose of  $MgSO_4$  was noted till 48 hours of receiving loading dose of  $MgSO_4$ . However if there was a repeat fit with loading dose of  $MgSO_4$  then an additional 2 gms.  $MgSO_4$  was given intravenously and shifted to maintenance regimen. **Results;** Mean age of our study cases was noted to be  $29.75 \pm 4.56$  years (with minimum age of our patients was 22 years while maximum age was 35 years). Mean parity of our study cases was noted to be  $2.03 \pm 1.31$ . Majority of our study cases i.e. 64 (56.1%) had parity less than 3 and gravidity less than 4 was noted in 82 (71.9%) of our study cases. Mean gestational age of our study cases was noted to be  $30.80 \pm 4.90$  weeks (with minimum gestational age was 22 weeks and maximum gestational age was 38 weeks). Mean body mass index (BMI) of our study cases was noted to be  $24.67 \pm 3.02$   $kg/m^2$  and obesity was noted in 25 (21.9%) of our study cases. Mean number of seizures (before start of therapy) was  $6.46 \pm 3.21$  (with minimum no. of seizures was 3 while maximum no. of seizures were noted to be 15). Recurrence of seizures was noted in 11 (9.6%) of our study cases. **Conclusion;** Our study results have shown that recurrence of seizures was quite low with loading dose of magnesium sulphate. It is safe, effective and reliable therapy in controlling seizures in eclampsia. Provision of loading dose of  $MgSO_4$  to these patients will not only reduce painful intramuscular injections but also helpful to reduce related costs. So use of loading dose of  $MgSO_4$  regimen is recommended of our group of patients as most of our patients are poor.

**KEYWORDS;** Loading dose, eclampsia, recurrence of seizures.

## INTRODUCTION

Over a half million women die each year from pregnancy related causes and 99% of these deaths occur in middle and low income countries.<sup>[1]</sup> Eclampsia is a common cause of maternal mortality worldwide particularly in developing countries.<sup>[2]</sup> Eclampsia accounts for more than 50,000 maternal deaths each year.<sup>[3]</sup> Eclampsia is a life threatening multisystem disorder with complex pathogenesis.<sup>[4,5]</sup> Among the many anticonvulsants  $MgSO_4$  is the drug of choice for prevention of recurrence of seizures in eclampsia.<sup>[6]</sup> It acts on smooth muscles causing relaxation and vasodilation, increasing cerebral perfusion and also inhibit NMDA receptors thereby increasing seizure threshold.<sup>[7]</sup>  $MgSO_4$  also decrease cerebral edema formation after brain injury.<sup>[8]</sup>  $MgSO_4$  can be given by Zuspan regimen (loading dose of 4gms I/V and maintenance dose of 1gms/hour I/V for 24

hours) or Pritchard regimen (loading dose of 4gms I/V and 10gms I/M and maintenance dose of 5gms I/M every 4 hour for 24 hours.<sup>[9]</sup> In Dhaka Medical College, according to the guidelines published by eclampsia working group the dose schedule is 4gms I/V and 3gms I/M in each buttock as loading dose followed by 2.5gms I/M every 4 hours in alternate buttock till 24 hours.<sup>[10]</sup> A potential concern for  $MgSO_4$  therapy is the risk of side effects like renal impairment, respiratory and cardiac arrest and CNS depression which requires careful monitoring of urine output respiratory rate, heart rate and tendon reflexes. Complications increases with duration of treatment.<sup>[11]</sup> Similarly cost of therapy would inevitably increase with duration of treatment. It has been recently suggested that an initial loading dose of  $MgSO_4$  is sufficient to arrest convulsions and we also observed that most of the patients did not receive maintenance dose due to suspicion of toxicity and they

did not convulse any further.<sup>[12-15]</sup> A study was conducted at Maternity Unit, Specialist Hospital, Sokoto Nigeria.<sup>[13]</sup> It showed that loading dose of MgSO<sub>4</sub> was effective in 92% patients of eclampsia.<sup>[13]</sup> Recurrent seizures were observed in 8% of patients which is comparable to the ones who have received standard treatment.<sup>[13]</sup> A study conducted at

Dhaka Medical College & Hospital Bangladesh showed that the recurrent convulsion rate was almost the same (3.96% versus 3.52%) between the groups that had only a loading dose of 10gms (4gms I/V + 6gms I/M) and the control group that had both the loading dose and maintenance dose of 2.5gms 4 hourly for 24 hours.<sup>[10]</sup>

## MATERIALS AND METHOD

Pregnant ladies (n = 114) of any parity, 15-35 years old having more than 20 weeks gestational amenorrhea from last menstrual period were included in our study. Other causes of convulsions like epilepsy, meningitis (history of fever, unconsciousness and neck rigidity) and metabolic disorders like hypoglycemia (low blood glucose level < 60mg/dl), hypocalcemia (low calcium level in the blood < 8.5mg/dl), Hyponatremia (low sodium level in the blood < 130mEq/L) were excluded from our study. Eclamptic patients fulfilling the inclusion and exclusion criteria admitted in the labor room of Nishtar Hospital Multan, Pakistan were included in the study. Patients admitted with eclampsia were examined for recurrent seizures. Frequency of recurrent seizures with loading dose of mgso<sub>4</sub> was noted till 48 hours of receiving loading dose of MgSO<sub>4</sub>. However if there was a repeat fit with loading dose of MgSO<sub>4</sub> then an additional 2 gms MgSO<sub>4</sub> was given intravenously and shifted to maintenance regimen.

## RESULTS

Our study included a total of 114 pregnant women presenting with eclampsia who met inclusion criteria of our study. Mean age of our study cases was noted to be 29.75 ± 4.56 years (with minimum age of our patients was 22 years while maximum age was 35 years). Our study results have indicated that majority of our study cases i.e. 76 (66.7%) were from age group of 26 – 35 years of age. Mean parity of our study cases was noted to be 2.03 ± 1.31. Majority of our study cases i.e. 64 (56.1%) had parity less than 3 and gravidity less than 4 was noted in 82 (71.9%) of our study cases. Mean gestational age of our study cases was noted to be 30.80 ± 4.90 weeks (with minimum gestational age was 22 weeks and maximum gestational age was 38 weeks). Majority of our study cases i.e. 77 (67.5%) had gestational age more than 30 weeks. Mean body mass index (BMI) of our study cases was noted to be 24.67 ± 3.02 kg/m<sup>2</sup> and obesity was noted in 25 (21.9%) of our study cases. Mean number of seizures (before start of therapy) was 6.46 ± 3.21 (with minimum no. of seizures was 3 while maximum no. of seizures were noted to be 15) and majority of these patients i.e. 62 (54.4%) had

history of 1 – 5 seizures. Recurrence of seizures was noted in 11 (9.6%) of our study cases.

## DISCUSSION

Magnesium sulfate (MgSO<sub>4</sub>) has been used throughout the 20<sup>th</sup> century for prevention of eclamptic seizures and continues to be used extensively.<sup>[16-18]</sup> Our study included a total of 114 pregnant women presenting with eclampsia who met inclusion criteria of our study. Mean age of our study cases was noted to be 29.75 ± 4.56 years (with minimum age of our patients was 22 years while maximum age was 35 years). Our study results have indicated that majority of our study cases i.e. 76 (66.7%) were from age group of 26 – 35 years of age. Sharafat et al,<sup>[1]</sup> also reported 28 years mean age which is similar to that of our study results. A study conducted by Shoaib et al,<sup>[2]</sup> reported 28.06 ± 5.5 years mean age of these patients, these results are in compliance with that of our study results. Aziz et al,<sup>[19]</sup> also reported that majority of eclamptic patients belonged to age groups of 21-29 years which is similar to our study results. Abdullah et al,<sup>[20]</sup> reported 28 years mean age of the pregnant ladies having eclampsia, these findings are in compliance with that of our study results. Rathore et al from Lahore<sup>[21]</sup> also reported similar age range. Regmi et al,<sup>[12]</sup> reported 21 ± 3 years mean of eclamptic women which is a bit less than that reported in our study.

Mean parity of our study cases was noted to be 2.03 ± 1.31. Majority of our study cases i.e. 64 (56.1%) had parity less than 3 and gravidity less than 4 was noted in 82 (71.9%) of our study cases. Most of them were primigravida, similar results have been reported by Aziz et al,<sup>[19]</sup> and Abdullah et al,<sup>[20]</sup> that eclampsia being more common in primigravida. Regmi et al.<sup>[12]</sup> also reported primigravida predominance which is in compliance with that of our study results. Shoaib et al<sup>[2]</sup> also reported mean parity was 2.46 ± 1.54. These results are similar to that of our study results. Similar results have been reported by Sharafat et al.<sup>[1]</sup>

Mean gestational age of our study cases was noted to be 30.80 ± 4.90 weeks (with minimum gestational age was 22 weeks and maximum gestational age was 38 weeks). Majority of our study cases i.e. 77 (67.5%) had gestational age more than 30 weeks. Aziz et al.<sup>[19]</sup> has reported similar results. Shoaib et al,<sup>[2]</sup> reported mean gestational age to be 34.43±2.50 weeks which similar to our study results. Mean body mass index (BMI) of our study cases was noted to be 24.67 ± 3.02 kg/m<sup>2</sup> and obesity was noted in 25 (21.9%) of our study cases. Mean number of seizures (before start of therapy) was 6.46 ± 3.21 (with minimum no. of seizures was 3 while maximum no. of seizures were noted to be 15) and majority of these patients i.e. 62 (54.4%) had history of 1 – 5 seizures. Regmi et al<sup>[12]</sup> 5.93 ± 4.76 mean no. of seizures, these results are in compliance with that of our study results.

Recurrence of seizures was noted in 11 (9.6%) of our study cases. A study conducted by Aziz *et al.*<sup>[19]</sup> from Hyderabad reported 7% recurrence of seizures. These findings are similar to that of our study results. Regmi *et al.*<sup>[12]</sup> reported recurrence of seizures in 5% (2/40) eclamptic patients treated with loading dose of MgSO<sub>4</sub>. These findings are in compliance with that of our study results. Shoaib *et al.*<sup>[2]</sup> also reported loading dose recurrence was only 2 % which shows compliance with our study results. Sharafat *et al.*<sup>[1]</sup> reported 100% control of seizures and there were no recurrence. Recurrent seizures were observed in 8% of patients which is comparable to the ones who have received standard treatment as reported by Ekele *et al.*<sup>[13]</sup>

## CONCLUSION

Our study results have shown that recurrence of seizures was quite low with loading dose of magnesium sulphate. It is safe, effective and reliable therapy in controlling seizures in eclampsia. Provision of loading dose of MgSO<sub>4</sub> to these patients will not only reduce painful intramuscular injections but also helpful to reduce related costs. So use of loading dose of MgSO<sub>4</sub> regimen is recommended of our group of patients as most of our patients are poor.

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