

Research Article

A prospective study on the use of magnesium sulfate in prevention and management of eclampsia with emphasis on adverse drug reactions

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ABSTRACT

Introduction: The hypertensive disorders in pregnancy are the leading causes of maternal and perinatal mortality. Management of preeclampsia and eclampsia remains controversial even today. Several drugs with different regimens are available at present. As a consequence; women are treated in various ways by different regimens.

Aim: Our work aimed to study the use of various magnesium sulfate regimens used in management of eclampsia in a tertiary care teaching rural hospital.

Methods: A prospective, observational, non-interventional study was carried out among the eclamptic patients admitted to obstetrics ward. After explaining the purpose and method of study, through the patient information sheet, patients willing to sign the informed consent form were enrolled for the study. Relevant data was gathered from their case files and by direct interview with the patients that were recorded in the case record form.

Results: Of the 35 cases of eclampsia recorded during the study period, we observed that all the patients were treated with Pritchard's regimen of Magnesium Sulfate. It was noticed that there was improvement in all the patients with no adverse drug reactions recorded during the time of management.

Conclusion: Maternal and perinatal mortality can be reduced to major extent by prevention of eclampsia. Prompt diagnosis and institution of therapy by selecting an ideal anticonvulsant is essential as the maternal and perinatal mortality progressively rises with increase no of convulsions. Magnesium Sulfate is a potent anticonvulsant with mild antihypertensive activity with less adverse effects.

Keywords: Eclampsia, Preeclampsia, Magnesium sulfate

INTRODUCTION

Despite advances in obstetrics and increased orientation towards antenatal visits, preeclampsia and eclampsia remain unresolved and challenging in the field of

obstetrics and are major contributors to maternal and perinatal mortality.¹

Berg and colleagues reported that almost 16% of 3201 pregnancy related deaths in the United States from 2001

to 2007 were from complications of pregnancy-related hypertension. In the UK, preeclampsia and eclampsia are the second largest cause of both direct maternal death and perinatal loss, responsible for the death of 6 to 9 women annually.² Hypertensive disorders of pregnancy are one of the leading causes of severe maternal mortality and morbidity approximately 6-8% of all pregnancies worldwide.^{2,3} These disorders are responsible for 20% of perinatal mortality.^{4,5}

Until middle of the twentieth century there was staggeringly high maternal and perinatal mortality associated with eclampsia both in developed and developing countries. Thereafter, with worldwide innovation of Maternal and Child Health care concept, expert perinatal care, early detection of risk factors, high index of suspicion and extended liberal indication for hospitalization, there was dramatic reduction in the incidence and improved outcome of preeclampsia and eclampsia. However, this was observed only in developed countries, whereas in developing countries where most of the patients are admitted in the hospital as an emergency case, lack of proper antenatal care and negligence due to illiteracy, superstition and low socioeconomic status this impact was minimal.^{2,6}

According to NICE (National Institute for Health and Clinical Excellence) guidelines several risk factors are involved for the occurrence of hypertension during pregnancy. They include high risk factors such as history of hypertensive disease during a previous pregnancy, chronic kidney disease, auto-immune disease, type-1 or type-2 diabetes, chronic hypertension while the moderate risk factors include first pregnancy, age >40years, pregnancy interval >10years, body mass index >35kg/m², family history of preeclampsia and multiple pregnancies.⁷

Management of eclampsia has undergone a long trial from empirical to specific treatment viz. venesection, sedatives, cold packs till 1870, morphine, chloral hydrate etc. in early 20th century and specific regimens from the middle of the 20th century.⁸ Thus, various drugs and regimens were introduced and quickly discarded.

Currently three major regimens are in practice such as Diazepam, Lytic cocktail and Magnesium Sulfate, with comparable results. The excellent results were obtained by Pritchard regimen (magnesium sulfate) in the management of eclamptic patients with low maternal mortality (0.4%) and good perinatal mortality (4%).^{7,9}

Hence, we planned for the study on the management of eclampsia using Magnesium sulfate regimen.

METHODS

It was a prospective, observational and non-interventional study which was carried out in the obstetrics ward of Dhiraj Hospital which is a rural tertiary care teaching hospital affiliated with SBKS Medical Institute and

Research Centre, under Sumandeep Vidyapeeth. The study was initiated only after obtaining an approval from institutional ethics committee of Sumandeep Vidyapeeth.

A written Informed Consent was obtained from the patients in the vernacular language after thorough explanation about the purpose and method of the study through Patient Information Sheet before enrolling them for this study. Relevant data was gathered from their case files and by direct interview with the patient. Information of all patients was recorded in Case Record Form. The data was analysed for pattern of prescription and drug use.

RESULTS

A total of 750 deliveries were recorded during our study period. Out of these recorded cases, 35 were diagnosed as patients of eclampsia and were treated accordingly. Thus making an incidence of eclampsia to be 4.6% (Figure 1).

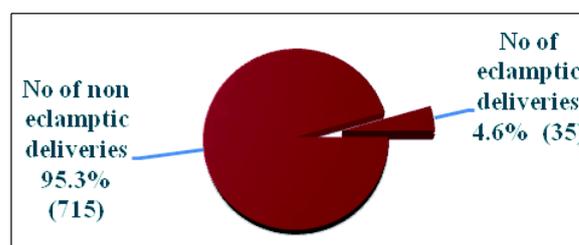


Figure 1: Incidence of eclampsia.

Of the recorded 35 patients of eclampsia 22 were primigravida (62.85%) while 13(37.14%) were multigravida (Table 1, Figure 2).

Table 1: Parity of eclamptic patients.

Parity	No. of Patients (%)
Primigravida	22 (62.85)
Multigravida	13 (37.14)

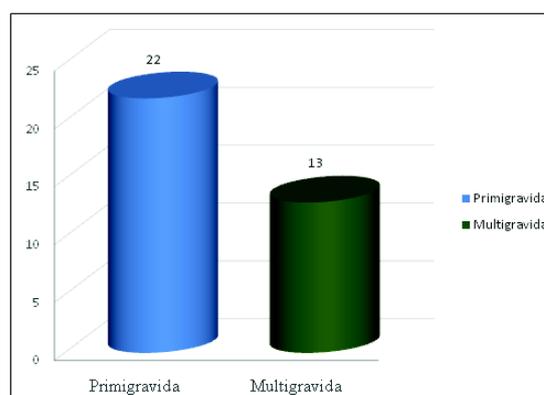


Figure 2: Parity of eclamptic patients.

In relation to gestational age we found that 23 (65.71%) patients suffered during antepartum, 9 (25.71%) suffered during intrapartum, while 3 (11.1%) patients suffered in postpartum period (Table 2, Figure 3).

Table 2: Percentage of occurrence in relation to gestational age.

Gestational Age (weeks)	No. of patients (%)
25-30	23 (65.71)
31-35	9 (25.71)
36-40	3 (11.1)

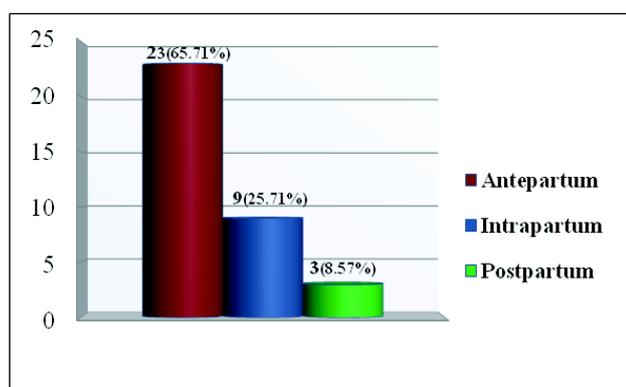


Figure 3: Percentage of occurrence in relation to gestation age.

DISCUSSION

Eclampsia remains as one of the leading causes for maternal and perinatal mortality.¹⁰ In our study duration of 6 months, out of the 750 deliveries that were recorded 35 patients were found to be eclamptic, that makes the incidence of eclampsia to be 4.6%. Primigravida are more likely to develop eclampsia compared with the multigravida.¹¹ It has also been found in our study that most patients were of primigravida (28-37 years).

Although the disease condition is very old the cause still remains unclear. Several theories explain the cause of eclampsia which include; abnormal trophoblastic invasion of uterine vessels, immunological intolerance between maternal and fetoplacental tissue, maternal maladaptation to cardiovascular and inflammatory changes of normal pregnancy, nutritional deficiency and genetic influences.^{11,12}

The cause of eclampsia being multifactorial the management has undergone a long trial from empirical to specific treatment. However, currently 3 regimens are in practise that includes diazepam, lytic cocktail and magnesium sulphate regimen, of all the above regimens it has been found that magnesium sulphate regimen is popularly used with good results. Magnesium sulfate regimens include Pritchard's regimen, Zuspan's regimen and Sibai regimen.^{11,13-15}

In our study we found that all 35 cases were treated with Pritchard's regimen in which magnesium sulfate was initially administered 4gm IV, slowly over 5-10mins followed by 10gm deep IM. The maintenance dose included 5gm IM 4th hourly for 24hrs.^{13,14} All patients improved with Pritchard's regimen. There was no maternal or foetal mortality recorded during the study period. There were no adverse events recorded at the time of management.

As it was the short term study and the number of eclamptic patients recorded during the study were 35 which do not reflect behavior of the general public. The study was planned to compare the effect of various regimens of magnesium sulphate in the treatment of eclampsia, however in our centre it was a limitation as only Pritchard's regimen was used for all 35 patients. A future study in larger population including urban and rural areas with comparison between states would give a real picture of the situation.

CONCLUSION

Even today in developing country like ours we find that cases of eclampsia continues to occur despite of the efforts taken to improve with the antenatal care. Although, various regimes and numerous newer antihypertensive drugs are available, magnesium sulphate remains to be safe and effective in the treatment of eclampsia.

Regular antenatal care, timely diagnosis and appropriate treatment would reduce the maternal and foetal mortality and related complications of eclampsia. Therefore, coordinated efforts are needed amongst the community, governmental and non-governmental organizations, medical and paramedical staff. More of the awareness programmes are to be conducted for the illiterate group and emphasis on ANC and its importance that would probably help us to come down with the incidence.

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