MAGNESIUM SULPHATE VERSUS PHENYTOIN FOR ECLAMPSIA: ONE YEAR PROSPECTIVE STUDY

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ABSTRACT

Aim: Eclampsia is one of the important preventable causes of maternal mortality. This study aims to review the clinical profile of eclamptic women and compare the maternal mortality, recurrence of convulsions, other morbidities including the neonatal outcome with Magnesium Sulphate versus Phenytoin used for its management.

Material and Methods: Prospective study was carried out in all the eclamptic patient admitted in Gynae ward from April 2000 - April 2001 (Baisak 2057 to Chaitra 2057).

Results: There were total of 30 patients. Most of the them (53.3%) were of the 15-20 years of age group and three fourth (73%) were primigravidas. More than half (56%) were unbooked and one fourth were nonimmunised and illiterate. Blood pressure had never been measured in 63% of the patient. In the Phenytoin Group 68.75% had recurrences of fits where as in the Magnesium Sulphate Group only 21.43 % had recurrence. In the Magnesium Sulphate group, 50% delivered normally whereas 42.5% needed caesarean section in the Phenytoin group. Only 6.2% delivered normally and in 37.5 % forceps had to be applied. There were 37.50% admission to Neonatal Intensive Unit (NICU) for various complications in Phenytoin group whereas there were only 14.2% NICU admission in Magnesium Sulphate group. There were two cases of neonatal deaths out of 16 neonates in the Phenytoin group whereas only one out of 14 cases in Magnesium Sulphate group. There was only one maternal death in these thirty patients and it belonged to the Phenytoin group.

Conclusion: As proved in many other studies this study also showed that Magnesium Sulphate was superior to Phenytoin in terms of recurrence of fits, maternal and neonatal outcome. In our country where many deaths still occur due to Eclampsia the valuable role of magnesium Sulphate should not be ignored and health personnels should be trained for its frequently than it is practiced to-day.

Key Words: *Eclampsia, Preeclampsia, Magnesium Sulphate, Phenytoin.*

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INTRODUCTION

Eclampsia is defined as the development of convulsions and or coma unrelated to other cerebral conditions during pregnancy or in the postpartum period in patients with signs and symptoms of preeclampsia. Its incidence is reported to be 1 in 110 to 1 in 34448 pregnancies.¹ It is one of the leading causes of maternal mortality in the developing countries. Maternal mortality from Eclampsia ranges from less than 1% to nearly 20% of all deliveries; but fortunately in recent years figures less than 5% have prevailed.² The perinatal mortality has also likewise decreased and ranges from 130-300/1000.²

Although Magnesium Sulphate is now established as the drug of choice in pregnancy with severe hypertension and eclampsia, few health care personnel's are still reluctant to start the therapy. Other alternatives being phenytoin, diazepam and lytic cocktail. Lopez Llera³ has classified eclampsia according to the time of onset into antepartum eclampsia, intrapartum, postpartum and intercurrent eclampsia. The highest rate of maternal mortality was found in the early eclampsia cases (those occurring before 28 weeks of gestation) 22.2% and lowest in the intercurrent eclampsia subtypes (0%). In the frequency of complications, the highest incidence of brain haemorrhage belonged to early eclampsia 24.1% vs 4.3% in the and abruptio were significantly higher in antepartum eclampsia and PPH (1.6%) more in postpartum eclampsia. Currently the most commonly used regime is the Magnesium Sulphate either the standard intramuscular regime of Pritchard⁴ or the IV regime of Zuspan or Sibai⁵ Phenytoin which is a well recognized anticonvulsant is also frequently used in Eclampsia. It stabilizes the neuronal membranes and therapeutic levels after IV load can be achieved rapidly. It can also decrease the blood pressure and increase the cerebral blood flow, with little effect

on the respiratory drive, gastric emptying and level of consciousness. In spite of all these advantage studies have shown it to be less effective than Magnesium Sulphate.

Many studies have been done comparing the efficacy of Magnesium versus Phenytoin. This study also aims to compare the effectiveness and advantages of both the drugs over each other as well as study the profile of eclamptic women in this part of the country

MATERIAL AND METHODS

One year prospective study was done in patient coming to labour room of B. P. Koirala Institute of Health Sciences with antepartum and postpartum eclampsia. They were randomly allocated to the Magnesium Sulphate and Phenytoin Group. Age group distribution, parity, geographical location, ethnicity was analyzed and were comparable in both the groups. Recurrence of fits, maternal morbidities and neonatal morbidities were compared between the two groups.

RESULTS

There were total of 30 cases of Eclampsia in one year. Out of which 14 cases were given Magnesium Sulphate and 16 cases were treated with Phenytoin. There were 24 (80%) cases of antepartum eclampsia and 6 (20%) cases of postpartum eclampsia. Incidence of eclampsia in patients coming to BPKIHS was 1 in 98 deliveries in this year.

Table No. I: Age Group Distribution

Majority of the patient coming with Eclampsia were teenage pregnancy.

Table No. II: Gravida/Parity Distribution

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There were 6 cases of Postpartum eclampsia (20%). Eclampsia was common in primipara and primigravida group.

Table No. III: Ethnicity Distribution

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The indigenous Tarai sect seemed to have significantly high rate (70%) of eclampsia, which could be because of the poor socioeconomic, condition, illiteracy and neglect in the family.

Table No. IV: Geographical Distribution

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** Most of the eclamptic patient was from Sunsari District, where the institute is situated.*

Table No V: Period of Gestation

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Term pregnancy patient constituted most of the eclamptic patient.

Table No VI: Antenatal Visits

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None of the patients with eclampsia had proper booking criteria. Irregular supervision with maximum of two visits were present in 43.3 % of the patients.

Table No VII: Immunization Status

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One fourth of the patients were nonimmunised.

Table No. VIII: Educational Level

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Only 6.7% of the patient were educated more than class 10. One fourth of the patient were illiterate.

Table No IX : B.P in the Antenatal Period

** Blood Pressure was not measured in 63% of the patients.*

Table No. X: Recurrence of Fits

In the Phenytoin Group 68.75% had recurrences where as in the Magnesium Sulphate Group only 21.43 % had recurrence.

Table No. XI: Mode of Delivery

In Phenytoin group LSCS and instrumental deliveries were more than the than normal deliveries. In the Magnesium Sulphate group 50% delivered normally whereas 42.5% needed LSCS. (NVD=Normal Vaginal delivery, LSCS=Lower Section Caeserean Section)

Table No XII: Neonatal Outcome

In Magnesium group there was 7.1% still birth whereas Phenytoin had 12.5%.

Table No XIII: Neonatal Complications

There were 37.5% admission to NICU for various complications in Phenytoin group whereas there only 14.2% NICU admission. Two cases out of 16 died in the Phenytoin group whereas only one out of 14 cases died in Magnesium Sulphate group.

There was only one maternal death in these thirty patient and it belonged to the phenytoin group.

DISCUSSION

Incidence of Eclampsia ranges from 0.05% to 0.2% of all deliveries.⁶ In this study, the incidence was 1.02%. Eclampsia is estimated to complicate around 1 in 2000 deliveries in Europe and other developed countries⁷ and from 1 in 100-1700 in deliveries in the developing countries⁸ Eclampsia is associated with around 10% of maternal deaths and an estimated 50,000 women die each year having had an eclamptic convulsion.⁹

In this study, the incidence was 1 in 98 deliveries and this is only a fraction of cases, which come to the hospital. Here the commonest age group was 15-20 and 73 % were primigravidae. More than half (56%) were unbooked and 43% had minimal supervision.

Out of these in patient with minimal supervision 63% did not have blood pressure checked. One fourth patient in this study were unimmunised and illiterate.

An ideal anticonvulsant should control fits, prevent recurrences and cause no harm to the mother and fetus. The anticonvulsant used are magnesium Sulphate (Pritchard and Prichard's),¹⁰ benzodiazepine (Leans et al),¹¹ phenothiazine derivative with pethidine or lytic cocktail (Menon)¹² and phenytoin sodium (slater).¹³ The regimen recommended by Pritchard will ordinarily keep the maternal magnesium level between 5-8mg/dl which is similar to the level of the I.V regime of Sibia but more than the I.V regime of Zuspan. Current standard regimens have proved to be rapidly effective with reliable results and predictable duration of action and a wide margin of safety. Maternal side effects reported with the magnesium use include flushing dry mouth drowsiness and slurred speech; blurred vision nausea and vomiting laryngeal reflexes however are intact which protects against the aspiration pneumonia.¹⁴

Lucas and colleges¹⁵ reported a prospective study from Parkland Hospital in which women with PIH were admitted for delivery was randomized to give Magnesium Sulphate or Phenytoin. Ten women randomly assigned to Phenytoin regime had elamptic convulsions. There were no convulsions in the 1049 women randomly assigned to magnesium Sulphate ($p=.004$) there were no significant difference in any risk factors for Eclampsia between the two groups of women studied. Maternal and neonatal outcomes were similar in the two groups.

In our study only 68.75% had recurrence in the Phenytoin group and 21.43 % in the Magnesium Sulphate group. Half of the patient in Magnesium Sulphate patient had normal vaginal delivery whereas more than half of the patient in the phenytoin group had LSCS.

Friedman et. al.¹⁶ reported a prospective randomized clinical trial comparing Magnesium

with Phenytoin . Lower maternal side effects shorter duration of active phase of labor and lower amount of estimated blood loss at vaginal delivery in the phenytoin group.

In the review by Dudley et. al.¹⁷ Magesium Sulphate was associated with substantial reduction in the recurrence of convulsions when compared to phenytoin relative risk. 30,95% confidence interval .25-.46. The trend in maternal mortality favors magnesium Sulphate but this difference was not statistically significant (RR.51, 95% CI 0.25-1.06). There was also reduction in the risk of pneumonia (RR.44.95%CI 0.24-0.79), ventilation (RR.66, 95% CI .49-0.90) and admission to intensive care unit (RR0.67, 95%CI 0.50 -0.89) associated with the use of magnesium Sulphate. For the baby the outcome was largely only reported by one trail (Collab Trail 1995). Magnesium Sulphate was associated with fewer admissions to SCBU (RR0.73, 95% CI 0.58-0.91) and fewer babies who died or were in SCBU for more than 7 days (RR0.77, 95%CI 0.63-0.95). This meta analysis strongly supports for the routine use of Magnesium Sulphate rather than other drugs, it is cheap and easy to produce and so it should be a priority to make this readily available for the care of women with Eclampsia in both the developed and developing countries. This studies although small shows than Magnesium Sulphate has definite advantage over the Phenytoin and should be encouraged to be used more often.

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