ORIGINAL ARTICLE

Management of Eclampsia at AKTH: Before and After Magnesium Sulphate

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Abstract

Background: *Eclampsia contributes significantly to maternal and perinatal morbidity and mortality in Nigeria. The world Health Organisation recommended Magnesium Sulphate as the most effective, safe and low cost drug for the treatment of eclamptic seizures and for prophylaxis in severe pre-eclamptic.This study is aimed to evaluate the effect of the introduction of magnesium sulphate for the management of eclamptic seizures on maternal and fetal indices in Aminu Kano Teaching Hospital [AKTH], Kano.*

Methods: *A retrospective study of all patients who presented with eclampsia in AKTH, Kano. The study period included 3years prior to introduction of magnesium sulphate [January 2002- December 2004] and 3years after its introduction [January 2005 – December 2007].*

Results: *During the study period, the prevalence of eclampsia was1.02% [1: 97 deliveries]. Sixty six [50.5%] of the patients were aged 19 and below. Approximately 62% of the patients were primigravida and 87% were unbooked. Thirty eight [29%] were treated with diazepam while ninety three[71%] were treated with magnesium sulphate. 39.4% of those treated with diazepam died compared to 15% of those treated with magnesium sulphate. Approximately ninety percent of those that died had no antenatal care. Overall perinatal mortality rate in this study was 312 per 1000 births [41]. 368.4per 1000 births among those treated with diazepam and296.7 per 1000births in the magnesium sulphate group. Approximately nine percent of those treated with magnesium sulphate develop toxicity [85.5% renal and12% respiratory]*

Conclusion: *This study is in support of the findings that magnesium sulphate is superior to diazepam in the reduction of maternal morbidity and mortality.*

Keywords: *Eclampsia, magnesium sulphate, diazepam, AKTH, Kano.*

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Introduction

Eclampsia is a common cause of maternal mortality worldwide but particularly in the developing countries. It is estimated that every year eclampsia is associated with about 50,000 maternal deaths worldwide, most of which occur in developing countries[1]. Nigeria has one of the highest rates of maternal mortality in the world. Eclampsia has been noted to be among the commonest causes of maternal mortality in Nigeria. The review of maternal deaths in Kano state for example showed that eclampsia was the commonest cause of the deaths and contributed 46.3% of all the maternal deaths in one study[2] and 31.3% in another[3]. In Birnin Kudu, in neighbouring Jigawa state, eclampsia contributed 43.1% of all maternal deaths[4].

In 1995, the Magpie trial was conducted. It was a randomized, placebo-controlled study that enrolled over 10,000 women in 33 countries (including Nigeria) and across a wide variety of clinical settings that confirmed the efficacy of $MgSO_4$ in the treatment of severe preeclampsia and eclampsia. Women treated with $MgSO_4$ had a 52% and 67% lower recurrence of convulsions than those treated with diazepam and phenytoin, respectively[5]. Use of $MgSO_4$ in patients with severe preeclampsia reduced the risk of progression to eclampsia by more than half and reduced maternal mortality[6].

On the basis of the available evidence, The World Health Organisation (WHO) has recommended $MgSO_4$ as the most effective, safe and low cost drug for the treatment of severe preeclampsia and eclampsia.

Magnesium sulphate was introduced for the treatment of severe preeclampsia and eclampsia in Aminu Kano Teaching Hospital (AKTH) in 2005.

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The Zuspan regimen (in which the maintenance doses are given intravenously) is used for the administration of the drug. This study was conducted to evaluate the effect of the introduction of the drug on maternal and fetal indices.

Materials and Methods

The study was a retrospective study on consecutive patients who presented to the hospital with eclampsia. The period of the study included three years prior to introduction of $MgSO_4$ (January 2002 to December 2004) and three years after its introduction (January 2005 to December 2007). Case files were retrieved from medical records and analyzed with EPI INFO VERSION 6.0 [CDC Atlanta USA]. Chi Square test was used for comparison of variables and p value <0.05 was considered as significant. The outcomes measured were maternal and perinatal mortality, APGAR scores at 1 and 5 minutes, toxic effects, delay at presentation and booking for Antenatal care.

Results

During the period of the study there were 15,888 deliveries and 163 eclamptic patients with a prevalence of 1.02% (1:97 deliveries). However, only 131 folders were retrieved (80% retrieval rate). Sixty Six (50.3%) of the patients were aged 19 years and below. The mean parity was 2.2 but majority were primigravida (61.6%). One hundred and Fourteen (87%) were unbooked for antenatal care.

The mean number of fits was 3.5 (range of 1-15). There was demonstrable delay (inability to present to the hospital within 6 hours of commencement of fits) in 71 (54.2%) patients.

Thirty eight (29%) were treated with diazepam while 93(71%) were treated with $MgSO_4$. Twenty Nine (22.1%) of the mothers died.

Twenty five (35.2%) of those that delayed died compared to 4(6.7%) of those that did not delay. Delay associated with mortality ($p<0.05$). Of those that died, 26(89.7%) did not have ANC as compared to 3(10.3%) that had ANC. This was statistically significant ($p <0.05$). Also, 15 (39.4%) of the patients treated with diazepam died compared to 14(15%) of the patients treated with $MgSO_4$. This is graphically shown in Figure I.

Fourty-one[31.2%] babies were delivered dead, giving overall perinatal mortality rate of 312 per 1000births.the perinatal mortality rate among those treated with diazepam was368.4 per 1000 births and 296.7 per 1000 births in those treated with magnesium sulphate. This finding is not statistically significant [$p>0.05$]. As shown in figure 2.

Apgar score of six or less at one minute was 80.2% in magnesium sulphate group compared to 94.7% in diazepam group. While at five minute, it was 46.2% compared to 57.9%.

Eight patients who had magnesium sulphate treatment had toxicity. Seven of these were renal while one was respiratory.

Discussion

The prevalence of eclampsia in this study was 1.02% [1 in 97 deliveries][7], this is similar to the finding in Ile –Ife [0.76%] but lower than 9.42% reported from Birnin- Kudu.[4]

Approximately 51% of the patients were aged 19years and below, this is comparable to 54% reported in a similar study from Pakistan.[8] Mean parity of the patients was 2.2, but the majority of the patients [61.6%] were primigravida, as was reported by Abdul MA etal in Azare in a similar study.[9] This is largely because pre eclampsia and eclampsia are diseases of the primigravida.

Eighty seven percent of the patients were unbooked for antenatal care; this is similar to 84% reported by other workers[8]. This may be due to poor public enlightenment on the importance of antenatal care or aversion to western oriented programs in the developing countries.

Eclampsia continues to be a significant cause of serious morbidity and it is still one of the leading triad of causes of maternal mortality in addition to obstetric haemorrhage and sepsis. However this study showed that maternal death is less likely to develop in patients treated with magnesium sulphate as compared to diazepam. It was found that only 15% of those treated with magnesium sulphate died compared to 39.4% of those treated who had diazepam treatment. This finding was in support of the Cochrane review, which reported that magnesium sulphate is associated with reduction in maternal death

when compared to diazepam.[10] this finding was also reported by Ola EA etal in Lagos.[11]Among those that died only 10.3% had antenatal care while 89.7% had no such care. This showed that antenatal care significantly influence maternal death from eclampsia [p<0.05]. This could be due to early hospital presentation for management among the booked patients. Delay before hospital presentation was found to be significantly associated with mortality, because in this study, 35.2% of those who delayed before presentation died compared to 6.7% of those that did not delay.
Overall, there were Fourty- one perinatal death in this study, giving a perinatal mortality rate of 312/1000 births. The perinatal mortality rate for those who had magnesium sulphate was 276.2/1000 births, while those who had diazepam treatment had a perinatal mortality rate of 368.4/1000 births. This however was not statistically significant [P >0.05]. This is comparable to a similar study in Nepal.[12]

There were also fewer infants with Apgar scores of less than six [6] at one minute among those who had magnesium sulphate therapy compared to those who had diazepam. In a similar work by Crowther C.[13]
He reported that there were significantly fewer infants born in the magnesium sulphate group with low Apgar score [less than 7 atone minute] compared with those in the diazepam group.
Eight patients [8-6%] who had magnesium sulphate developed toxicity, seven of these were renal and one was respiratory. This however is significantly lower than 32% reported by Lee W etal in a similar study.[14]
This study showed that magnesium sulphate has advantages over diazepam for the mother in the management of eclampsia, as reported in other studies[10,11]; however the benefit to the infant was not statistically significant.

In conclusion ,this study confirm that eclampsia is still a major cause of perinatal and maternal mortality in our environment, therefore considering the efficacy and safety of magnesium sulphate, it is advocated that it should be made widely available and its use be popularized in our hospitals nation wide. There is need for community health education for women to avail them selves of antenatal care and skilled care during delivery. Obstacle that impedes access to health care should be removed. There is also need to improve roads, transportation as well as communication.

FIGURE I: Maternal outcome

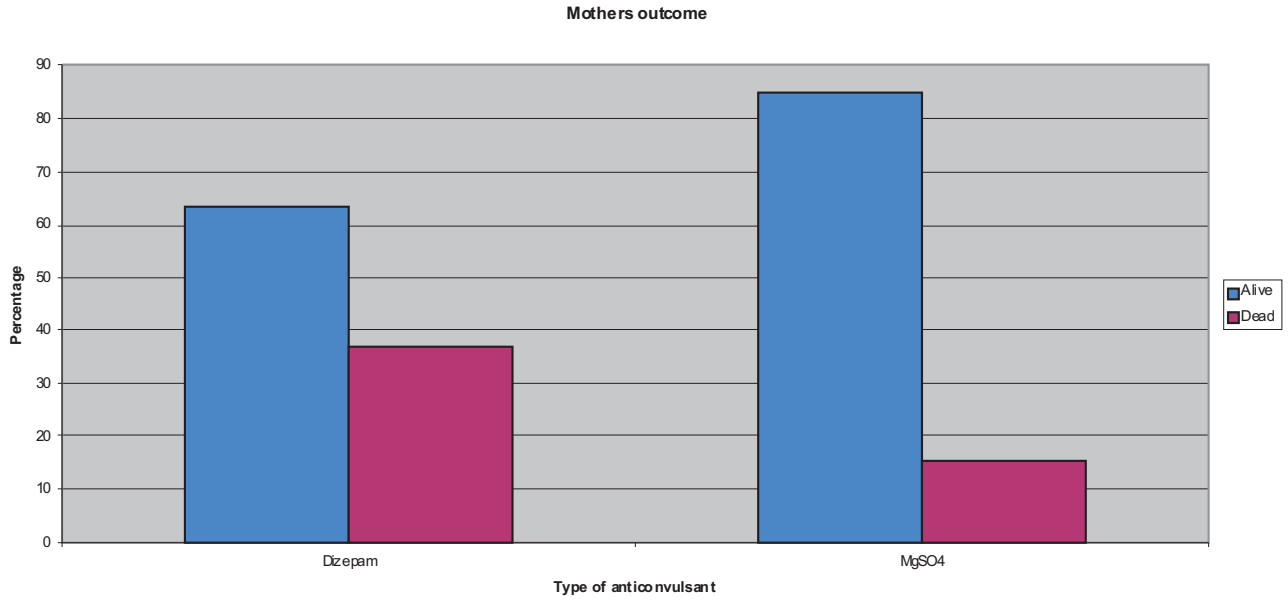
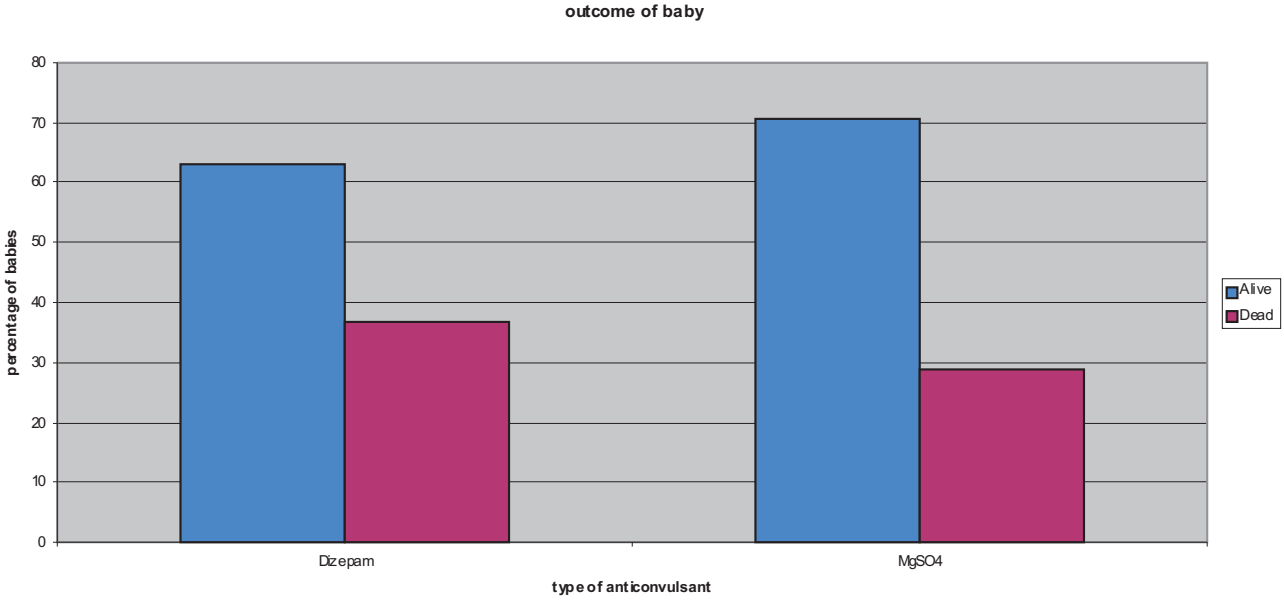


FIGURE 2: Fetal outcome



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