EFFECT OF FIT–DELIVERY INTERVAL ON MATERNAL AND FETAL OUTCOME IN ANTENATAL ECLAMPTIC PATIENTS

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ABSTRACT

OBJECTIVE: To determine the effect of fit-delivery interval on maternal and fetal outcome in antenatal eclamptic patients in our set up.

METHODOLOGY: This study was conducted at Hayatabad Medical Complex, Peshawar, Pakistan. All antenatal patients presenting with eclampsia from January 2011 to December 2012 were retrospectively analyzed for effect of fit-delivery interval on maternal outcome (mortality, ICU admission) and fetal outcome (meconium stained liquor, low Apgar score, still birth, neonatal ICU admission and early neonatal death). Postnatal eclamptic patients were excluded from the study. Fit-delivery interval was calculated in hours. Data were analyzed by using SPSS version 16.

RESULTS: Out of 8558 obstetric patients, 32 (0.37%) antenatal women had eclampsia. The mean age of the patients was 24±5.36 years. Most of the patients were young (80%) and primigravida (62.4%). Gestational age was >36 weeks in 29 (90.6%) cases. There was no maternal mortality. Three (p=0.083) patients who delivered in >15 hours after the onset of fits were admitted in the intensive care unit. Neonates who were delivered within 15 hours of onset of fits had better fetal outcome. Meconium stained liquor (12.5%, p=0.023), low Apgar score (21.87%, p=0.001) and neonatal ICU admissions (12.5%, p =0.044) were found to be statistically significant. While stillbirths (9.37%, p =0.083) and neonatal deaths (6.89%, p=0.161) were not statistically significant.

CONCLUSION: Fit-delivery interval of up to 10-15 hours had good maternal and fetal outcome. Timely referral to tertiary care hospital and timely delivery of eclamptic patients is recommended to improve the maternal and fetal outcome.

KEY WORDS: Eclampsia, fit-delivery interval, intensive care unit, Outcome, Apgar Score, Stillbirth, Maternal mortality.

INTRODUCTION

Eclampsia is defined as new onset grand mal seizures in a woman whose condition also meets the criteria for preeclampsia when a coincidental neurological disease, such as epilepsy, does not cause the convulsion.[1] Most cases of eclampsia present in the third trimester of pregnancy, with about 80% of eclamptic seizures occurring intrapartum or within the first 48 hours following delivery. Exact cause of pre-eclampsia or eclampsia is not clearly understood but abnormalities in the endothelial system of the patient have been suggested as a potential cause leading to multiple systemic derangements that can involve a diversity of organs. The risk factors seen frequently in eclamptic mothers are history of preeclampsia, preexisting hypertension, primiparity, multiple gestations, age older than 35 years, teen pregnancy, obesity, lower socioeconomic status, preexisting medical and obstetric problems and inadequate antenatal care visits.

Eclampsia is an obstetrical emergency and eclampsia/pre-eclampsia account for approximately 63,000 maternal deaths annually worldwide.[2] Eclampsia complicates about 1 in 1600 pregnancies.[3] It is associated with high maternal as well as perinatal morbidity and mortality.[4] Estimated maternal mortality due to eclampsia is 15% in developing countries and 2% in developed countries.[5] Eclampsia affects multiple organs of the mother resulting in permanent CNS damage from recurrent seizures or intracranial bleeds, disseminated intravascular coagulopathy, renal insufficiency, pulmonary edema and cardiopulmonary arrest leading to high maternal mortality. The high maternal mortality reported from developing countries was noted primarily among patients who had multiple fits outside the hospital and those without prenatal care. Also most of these women will not be identified early as most cases of eclampsia develop at home.[6,7]

The perinatal mortality due to eclampsia is estimated to be less than 10/1,000 in most developed countries to up to 60/1,000 in certain regions of Asia and Africa.[8,9] Main cause of which is poor blood supply to the developing fetus resulting in chronic hypoxia and premature delivery

leading to this high perinatal mortality. Furthermore, sepsis, placental infarcts, intrauterine growth retardation and birth asphyxia also contribute to fetal death.

Many factors play important role in development of maternal and fetal complications leading to above mentioned high maternal and fetal mortality. One such factor is fit-delivery time i.e. time Interval from 1st fit to delivery. Studies have shown that fit-delivery interval of 6-8 hours is associated with better maternal and fetal outcome.[10,11] Vital statistics obtained from this study may guide the public health policy makers and health care providers to improve the maternal and fetal mortality in eclamptic patients.

In the light of aforementioned facts and that no such study has ever been conducted in our set up, this study was conducted to determine the effect of fit-delivery interval on maternal and perinatal mortality in eclamptic patients.

METHODOLOGY

This descriptive observational study was conducted from January 2011 to December 2012, in the Department of Obstetrics and Gynaecology, Hayatabad Medical Complex, Peshawar, Pakistan. Data was retrieved from patient information systems through manually maintained patient registers. Approval from ethical committee of the hospital was priorly obtained. Retrospective analysis was made of all the patients who presented with antenatal eclampsia (either admitted with eclampsia or developed seizures in the ward). Exclusion criteria included patients presenting with intra uterine fetal death, congenitally abnormal fetus and those having postnatal eclampsia.

After admission all patients were managed according to the standard protocol with a backup of intensive care unit. As per protocol of the unit, Magnesium sulphate was used to control fits. High blood pressure was controlled with either intravenous hydralazine or oral methyldopa. All the patients included in the study were evaluated by detailed history, physical examination and relevant investigations including full blood count, liver function tests, renal function tests, serum electrolytes, serum uric acid, urine for albumin, 24 hours urinary proteins, coagulation profile, fundoscopy and obstetrical ultrasound. All the data sources including obstetrical record charts and referral letters were searched out to find the time of onset of fits and the time of delivery. Interval from 1st fit to delivery was calculated, and its effect on maternal outcome (mortality, intensive care unit admissions) and fetal outcome (Apgar score ≤7, meconium stained liquor, neonatal intensive care unit admission, intra partum still births and early neonatal deaths) were noted.

Data including patient demographics, seizures to delivery interval, maternal and fetal outcomes were entered in a structured proforma. After data collection, The results were analyzed by using SPSS version[16]. Frequencies and percentages were calculated. Chi square test was applied and P value was calculated with p-value <0.05 was considered to be significant.

RESULTS

During the study period a total of 8558 obstetric patients were admitted in the Gynae B Unit Hayatabad Medical Complex. Out of these 8558 patients, 67 (0.78%) had eclamptic. Out of 67 total eclamptic patients, 32 cases were antenatal and 35 were postnatal, so the incidence of eclampsia in antenatal women was 0.37%.

Mean age of the patients was 24±5.36 years and 28/32 (87.5%) patient were of less than 30 years of age. Twenty (62.5%) patients were primigravida and 29 (90.62%) patients were having gestational age of >36 weeks. The detailed demographic profile of the patients is given in Table I.

Most (46.87%) of the eclamptic patients delivered their babies in less than 15 hours after the onset of seizures (fit to delivery interval) while the rest of groups are depicted in (Table II).

Regarding mode of delivery, overall 14(46.7%) patients underwent cesarean sections, 14(46.7%) had normal vaginal deliveries and 4(12.5%) had instrumental deliveries. Of the Eclamptic patients who delivered within interval of ≤ 15 hours (n=15), 4 cases (12.5%) underwent cesarean sections, 8(25%) normal vaginal deliveries and 3(9.4%) instrumental deliveries (Table III).

TABLE I: DEMOGRAPHIC DETAILS OF ANTENATAL ECLAMPTIC PATIENTS (n=32)

Variable		Frequency (n=32)	Percentage
Age (in years)	≤20	15	46.87
	21-30	13	40.6
	>30	4	12.5
Gravidity	Primigravida	20	62.5
	Multigravida	7	21.87
	Grand multigravida	5	15.6
Gestational age (in weeks)	28-32	2	6.25
	>32-36	1	3.12
	>36	29	90.6

TABLE II: FIT–DELIVERY INTERVAL OBSERVED IN ANTENATAL ECLAMPTIC WOMEN (n=32)

Fit–Delivery Interval	Frequency (n=32)	Percentage
<5 hours	3	9.37
5-10 hours	6	18.75
>10-15 hours	6	18.75
>15-20 hours	8	25
>20-25 hours	4	12.5
>25-30 hours	5	15.6

TABLE III: MODE OF DELIVERY IN PATIENTS WITH ECLAMPSIA (n=32)

Fit-Delivery interval	Cesarean section	Normal vaginal delivery	Instrumental delivery
<5 hours (n=3)	1(33.33%)	1(33.33%)	1(33.3%)
5-10 hours (n=6)	2(33.3%)	3(50%)	1(16.6%)
>10-15 hours (n=6)	1(16.6%)	4(66.6%)	1(16.6%)
>15-20 hours (n=8)	5(62.5%)	2(25%)	1(12.5%)
>20-25 hours (n=4)	2(50%)	2(50%)	0
>25-30 hours (n=5)	3(60%)	2(40%)	0
Total (n=32)	14	14	4

TABLE IV: MATERNAL OUTCOME AMONG WOMEN DIAGNOSED WITH ECLAMPSIA (n=32)

Fit-Delivery interval	ICU admission	Recovery in ward	Maternal death
<5 hours (n=3)	0	3(100%)	0
5-10 hours (n=6)	0	6(100%)	0
>10-15 hours (n=6)	0	6(100%)	0
>15-20 hours (n=8)	1(12.5%)	7(87.6%)	0
>20-25 hours (n=4)	0	4(100%)	0
>25-30 hours (n=5)	2(40%)	3(60%)	0
Total (n=32)	14	14	4

Majority of the patients had smooth recovery in the labour ward except 1 out of 8 (12.5%) patient in the >15-20 hours interval group and 2 out of 5 (40%) patients in >25-30 hours interval group who were admitted in intensive care unit (Table IV).

Regarding fetal outcome in eclamptic patients, 15.6% had meconium stained liquor, 31.25% had low apgar score (≤7), 9.375% had stillbirths, 15.6% had neonatal intensive care unit (ICU) admission and 6.25% had neonatal deaths. The patients who delivered within 15 hours of interval (n=15) showed better fetal outcomes like meconium stained liquor in 01(6.7%) case, low Apgar score (≤7) in 3 (20%) cases, neonatal ICU admission in 01 (6.7%) cases and no stillbirths or neonatal deaths. The detailed results of the fetal outcome in various intervals are shown in Table V.

DISCUSSION

Eclampsia is an obstetrical emergency and is a leading cause of maternal and perinatal mortality, particularly in developing countries like Pakistan. Its management remains a great challenge to most of the obstetricians as the exact cause of preeclampsia or eclampsia is poorly understood. It makes it difficult to predict accurately or to prevent effectively the occurrence of preeclampsia or eclampsia. Multi-organ derangements antedating overt hypertension in eclampsia suggests that it is not central to pathogenesis of eclampsia /preeclampsia. So the management is directed towards its early detection and to ameliorate its progression till achievement of maturity with prevention of maternal complications[12]. Studies are being conducted to reduce serious complication of eclampsia by early recognition and prompt management of eclampsia.[13] There are many factors which affect the maternal and fetal outcome in eclamptic patients. Fit-delivery interval is an important factor in this regard. Studies have shown that fit-delivery interval of 6-8 hours is associated with better maternal and fetal outcome.[10,11]

In our study the overall incidence of eclampsia was 0.78%, which is comparable to other local studies.[14,15] This figure is lower than the studies conducted in other developing countries but still higher than the developed countries e.g UK where the incidence is only 0.05%.[16] This higher incidence as compared to advanced nations may be due to poverty, illiteracy, our shambolic health care system and inadequate antenatal visits.

In our study most(87%) of the eclamptic patients were young (mean age 24 years) and primigravidas (60.8%). Similar figures have been reported by researchers from other developing countries studies.[17,18] But, this pattern of presentation in our study shows lack of aggressive screening and treatment of preceding preeclampsia. In developed countries, the incidence of eclampsia has been markedly reduced through effective

screening and better management of preeclampsia.[19]

In our study there were no antenatal maternal deaths, although there were 4(5.97%) maternal deaths due to post-natal eclampsia so they were not included in the study. Three cases were admitted in the intensive care unit, these were the cases who delivered in >15 hours after the onset of fits. Choudary P et al has also reported no maternal death in their study15. Although local studies have shown high maternal mortality, Shaheen B et al have reported 16.9% maternal mortality.[14] Pal A, et al had reported maternal mortality of 6.05%.[16]

Our study has shown a poor peri-natal outcome like meconium stained liquor, low Apgar score, intra partum still birth and neonatal intensive care admission, mainly in cases who delivered 15 hours after the onset of fits. There were 3(9.36%, p=0.083) still birth and 2 (6.89%, p=0.161) neonatal deaths in our study and all these were cases who delivered more than 15 hours after the onset of fits.

Shaheen B et al has reported 31.17% still birth and 10.39% early neonatal death in their study. Poor outcome was observed in cases who delivered more than 9 hours after the onset of fits[14].Pal et al in their study has reported still birth of 22.7% and neonatal death of 7.67%. Prematurity and late arrival were the main contributing factors.[16] In our study cesarean section rate was 43.7% and main indication was failed induction. Alaudin M et al, has reported a higher cesarean section rate of 71.05% and the main indication was to achieve prompt delivery in patients who were unlikely to deliver within 6 hour.[17] Alaudin M et al has reported much lower perinatal mortality, 3.8% where delivery was con-templated within 6 hours of admission. Both steadily increased with increasing fit to delivery interval. Yakasi IA et al has

shown significant maternal and perinatal mortality in cases which delivered more than 12 hours after the onset of fits.[20] So in order to achieve a low perinatal mortality quick control of hypertension with prolongation of pregnancy till the desirable gestational age is achieved and up-gradation of the existing neonatal facilities appear to be vital. Furthermore prompt c/section can also improve the perinatal outcome by decreasing the proportion of the babies having birth asphyxia.

LIMITATIONS

This study has several limitations. Firstly, hospital based approach includes only women attending the hospital but many women and neonates die in rural areas without reaching health facility so community-based studies are a better tool for exploring mortality rates. Secondly, sample size is modest which limit the ability to critically appraise the direct causes and associated factors for mater-nal death and perinatal deaths. Thirdly, due to lack of follow up after delivery, the data on early neonatal morbidity and mortality as well as maternal outcome for the rest of the puerperium was not avail-able for analysis and finally retrospective nature of study limits its validity.

CONCLUSION

In our study, although fit-delivery interval of up to 10-15 hours had good maternal outcome but fetal outcome like intra partum still birth, neonatal ICU admission and neonatal death started after 10 hours of fit-delivery interval and progressively increased with increasing interval. Timely referral to tertiary care hospital and delivery of eclamptic patients can improve both maternal and fetal outcomes.

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AUTHOR'S CONTRIBUTION

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BR: Conception and design, acquisition of data, drafting the manuscript, final approval of the version to be published

RK: Acquisition of data, critical revision, final approval of the version to be published

SA, RJ, RA: Acquisition of data, analysis and interpretation of data, final approval of the version to be published

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