Eclampsia,a Major Cause of Maternal and Perinatal Mortality: a prospective analysis at a tertiary care hospital of Peshawar.

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Abstract

Objective:
To observe pregnancy outcome in eclamptics and to explore the avoidable factors contributing to the adverse outcome.

Setting:
Department of Obstetrics and Gynaecology. Hayatabad Medical Complex, Peshawar.
Method: This prospective cross-sectional observational study (from 1st Jan 2001 to 31st Mar 2002) included all the patients admitted to the unit with eclampsia. A Sociodemographic and clinical data was collected along with the results of investigations to categorize the complications and data was analyzed using various statistical tests.

Main outcome Measures:
Maternal and Perinatal morbidity and mortality.
Results: During the study period 71 patients developed eclampsia (frequency: 1.2%). Majority were unbooked (86%), primigravida (69%), < 25 years of age (63 %), referred from other health facilities (66.2%) and had some delay in seeking medical help (60%). Thirty five percent of patients developed major complications and 16.9% of them died (48% of overall maternal mortality). Mortality was frequent in Afghani women (OR 7.71 p value 0.002) and in women who sought medical help more than 6 hrs after developing seizures (OR 14.6 P value 0.0004). Perinatal mortality was 41.6% having prematurity the main risk factor (OR 13.33 p value 0.0000068).

Conclusion:
To decrease the adverse outcome associated with eclampsia a community-based approach is needed to improve community health education, socioeconomic status and prenatal care. Delivery of proper health care system and emergency obstetrical care facilities are vital for prevention, early detection, proper management and hence to save the mothers and their babies from such a dreadful disease (JPMA 53:346;2003).

Introduction

Eclampsia, which is defined as occurrence of seizures during pregnancy or within 10 days of delivery in a setting of preeclampsia, remains a leading cause of maternal and perinatal morbidity and mortality.1 Around 585,000 women die each year of pregnancy related causes, 98% of them in developing countries.2,3 Thirteen percent of these maternal deaths are due to hypertensive disorders of pregnancy, particularly eclampsia.2 Preeclampsia is also associated with high rates of preterm delivery, intrauterine growth

restriction and perinatal death.4 About a century ago eclampsia was a major cause of maternal mortality in industrialized countries. The steep decline in case fatality rate in developed countries is mainly due to better perinatal care; effective treatment of Pregnancy induced hypertension and rigorous assessment with early intervention in case a premorbid condition develops.

Keeping the above facts in mind this study was aimed to detect those factors, improvement in which will help to save the mothers and their babies from this life threatening condition.

Department of Obstetrics and Gynaecology, Hayatabad Medical Complex (HMC) receives complicated obstetrical and gynaecological cases from all over N.W.F.P, tribal areas and Afghanistan. Hence this study represents the population known for illiteracy and poverty, living in areas having difficult terrain with lack of health facilities.

Patients and Methods

This prospective cross sectional observational study was conducted in the department of Obstetrics and Gynaecology from 1st January 2001 to 31st March 2002. All patients admitted during this period with eclampsia (either admitted with eclampsia or developed seizures in the unit) were included in this study. The eclamptic patients who had been treated in some other health facility but referred to our unit, were also included, except those who were in the recovery phase and were admitted due to some other problem. All the patients included in the study were evaluated by detailed history and physical examination and then necessary routine investigations like full blood count, platelet count, coagulation profile, renal function test, liver function test, fundoscopy and urine for proteins, were carried out. Immediate management included passing an airway, prevention of fits, blood pressure control, intake output record and induction or immediate delivery of the antenatal patients. Patients were continuously monitored in the eclampsia room till they were stable and ambulatory. Further seizures were prevented by parenteral Diazepam (Dose: 10 mg I/V to abort convulsions with maintenance dose of 40 mg in 1 litre intravenous (I/V) infusion). Due to limited supply of Magnesium sulphate (MgSO4), only 12 patients received the drug, the reserve exhausted thereafter (Dose of MgSO4: loading dose 4 g over 10 minutes I/V plus 10 g intramuscularly (I/M); maintenance dose 5 g, 4 hourly I/M). For control of blood pressure sublingual nifidipine (10 mg), infusion nitroglycerine (10 mg/min doubling dose every 5 minutes) and infusion Methyldopa (Dose: 1-3 g/day in 3 divided doses as 100 ml infusion) for unconscious patients and in conscious patients oral Methyldopa (1-2 g/ day in three divided doses) and nifidipine 40-120 mg /day in two divided doses) were used. Neonatal care was provided by the department of paedriatrics.

A proforma was prepared in accordance with the objective of the study. Sociodemographic and clinical data were collected along with the results of the investigations to categorize the complications encountered. An effort was made to detect preventable factors responsible for the adverse outcome of certain eclamptic patients by clinically scrutinizing the available data in a hope to decrease the maternal and perinatal mortality associated with eclampsia. Data sources included interview from patients and their attendants, obstetric record charts of the patients, referral letter in case of those who were referred from any health facility and in case when the patient was shifted to another department, the records of the concerned department. After data collection, data was

analyzed using various statistical tests like chi-square, odds ratio (O.R), mean, standard deviation (S.D) and confidence interval (C.I). Results were then compiled after keeping various parameters in observation.

Results

During the study period total number of obstetric admission were 5642 and total number of deliveries 4317 while 71 patients developed eclampsia (Frequency: 1.2%). Sixty nine percent were primigravida, 21% multigravida and 10% grand multigravida. Majority were illiterate (94.4%) and unbooked (86%) (Table 1).

The risk of eclampsia was found to be higher in primigravidas (OR 7.05 CI 3.89-12.88 p value 0.0000000) as 49 (69%) patients were nulliparous (Figure). Mean age of the eclamptic patients was 24 years (SD 5.6), 91% of them were <30 years and 63% < 25 years

Forty four (62%) patients developed seizures antepartum (Table 2), 11 (15.5%) intrapartum and 16 (22.5%) postpartum of which 62.5% patients developed fits within 24 hours of delivery.

Forty seven (66.2%) patients were referred from other health facilities mostly from local missionary hospitals and adjacent towns, but a significant proportion included patients from distant areas. Only 33% of the patients had received specific treatment of eclampsia before coming to our department. The remainder had nonspecific treatment (35%) or no treatment (29%) at all. Three percent developed seizures in our unit.

Twenty four patients on admission were postnatal (either developed fits postnatally or were delivered elsewhere and then referred); 34 (91%) patients were induced, mostly by prostaglandin; 11 on admission were in advanced labour; one underwent elective caesarian section (c/section) and one died before any intervention. Mean admission to delivery interval was 11 hours (SD 9.7). Out of the total 47 antenatal patients c/ section was the mode of delivery in 4 patients (8.7%), 14 (30.43%) had instrumental delivery and 28 (60.86%) had non-instrumental deliveries. One patient died before delivery.

Six patients developed fits in a health facility, 24 came to a health facility immediately i.e., within 3 hours of developing seizures and rest (59%) had delay in reaching a health facility due to various reasons of which the commonest one was non-availability of transport (53.6%), and some others, as shown in the accompanying figure.

Thirty one (43.6%) patients had never had their blood pressure checked during antenatal period; 22 (30.9%) had hypertension during pregnancy and were on treatment whereas 17 (23.9%) patients had no signs of preeclampsia antenatally but only six of them had regular antenatal checkups. 71% of the patients gave history of preceding symptoms before developing seizures.

Seventeen patients had convulsions in our unit; most of them fitted only once or twice. In 4 (5.63%) patients seizures were not controlled by parenteral Diazepam. Thirty five percent of the patients (16% with Magnesium sulphate and 39% with Diazepam) had one or more major complications of eclampsia (pulmonary edema, cerebro-vascular accident, cardiovascular problems, disseminated intravascular coagulation (DIC), respiratory distress and retinal detachment). Various complications seen in these patients with their frequency are listed in Table 3.

Twelve out of 71 patients died showing case fatality rate of 16.9%, which accounted for 48 % of total maternal mortality recorded in our unit during the study period (Table 4).

Mean admission to death interval was 50 hours. Regarding risk factors for fatal maternal outcome, only delay in coming to health facility and Afghan race were proved to be statistically significant (Table 5). Mean hospital stay of these patients was 6 days (4.5 days for patients treated with Magnesium sulphate and 6.5 days with Diazepam).
Out of total 77 births in these patients, 24 (31.17%) were stillbirths, 8 (10.39%) early neonatal deaths and 45 (58.44%) were alive by the end of one week. This shows perinatal mortality rate (PMR) to be 416/1000 births and still birth rate (SBR) of 312/1000 births as compared to the overall PMR and SBR of 58 and 51/1000 during the specific time period in our unit. Prematurity was the major risk factor for perinatal mortality (PNM) (O.R 13.33 CI 3.66-51.99 p value .0000068) accounting for 62.5% of PMR. Birth asphyxia caused 37.5% of PNM.

Discussion

This study showed that frequency of eclampsia (1.65%) is considerably higher than other countries (USA 0.028%5, Finland 0.024%6, Nigeria 1.32%7and UK 0,072%8) but comparable with different tertiary care hospitals of Pakistan (Civil hospital Karachi 2%9, Nishtar Hospital 1.8%10, Faisalabad 1.7%11). The high frequency observed in this study is indicative of the poverty, illiteracy and our shambolic health care system as the blood pressure of 44% of patients was not checked throughout the pregnancy and 71% gave the history of preceding symptoms before developing seizures but still most of them didn't take it seriously.
Case fatality rate (CFR) in the studied group was 16.9%, which is higher than the figures reported from other parts of the country (Civil hospital Karachi 9.8%9, Nishtar hospital Multan 11%10, Faisalabad 9%11) and enormous when compared with that from developed countries.5,6,12 All maternal deaths in eclamptic mothers were found to have some avoidable factors. All the patients were unbooked and most of them came late to our unit. This was due to delay in seeking medical advice or delay in referral to tertiary health centres. But on the other side, various factors operating in our tertiary care hospitals in 58% of the patients may be responsible for the poor outcome as:
- Delay in delivery: This study showed a low caesarian (c/section) rate (8.7%) as compared to other studies.9-11 It has been proven by many studies that properly timed c/section can improve maternal outcome but in the decision of c/section we have certain limitations relating both to health care provision and to some strong beliefs of our community. Caesarian delivery is usually decided after consultation with anaesthetist and the attendants and the risk of general anaesthesia is titrated against that of delayed delivery.
- Substandard nursing care or inadequate fluid balance as 42% of the deaths were ascribed to pulmonary causes.
- Nonavailability of ideal anticonvulsant (Magnesium sulphate) in case of majority of the patients as mortality was found to be higher in patients given parentral Diazepam (18.6% compared with 8.3% with MgSO4), the observation which is consistent with the findings of other studies as in Dhaka mortality rates had fallen from 16% to 8% with the introduction of MgSO4.13 Similar was the observation of Sawhney et al14 who reported a significant reduction of maternal mortality with MgSO4.
- Delay in transfer to Intensive care unit (ICU), as ventilator was not available at a time for 3 patients.

- All the patients who got referred to ICU died. This could be due to their poor condition but another factor was the substandard intensive care facilities as during the study period doctors trained in intensive care provision were not available, every unit had to take care of their own patients and many intensive care facilities were not provided with arterial blood gas measurement).

As high case fatality rate (CFR) in eclamptic patients resulted in high overall maternal mortality it is concluded that the strategies to improve the outcome of eclamptic patients will also bring down the cumulative maternal mortality.

The perinatal mortality in this study (41.6%) is comparable to that reported from all over the country. (Civil Hospital Karachi 400/10009, Multan 479/100010) but it is much higher than that reported from Finland (5%) 6 and Nigeria (10%).7 In England eclampsia is still associated with a fetal loss of 177/1000 births.8 The perinatal mortality was found to be particularly higher in antepartum eclampsia (54.5%) as compared to intrapartum (30.7%) and postpartum (20%) .As prematurity was found to be the major risk factor for perinatal mortality (O.R 13.3, p-value 0.0000068), prompt management of the pregnancy induced hypertension with prolongation of pregnancy till the desirable gestational age according to neonatal facilities available along with upgrading of the existing facilities appear to be important in decreasing the perinatal mortality. Furthermore an early delivery by c/section can also improve the perinatal outcome by decreasing the proportion of the babies having birth asphyxia.

Conclusion

Eclampsia is an ongoing challenge for the whole medical community, the root of which lies in the soil of illiteracy, poverty and poorly implemented health care system. To combat this major health problem drastic changes are needed which require participation of community, governmental and non-governmental organizations, doctors and nurses for various strategies addressing health education of the community, provision of proper perinatal care to all pregnant women by implementation of mother and child heath care system, proper training of medical staff regarding emergency care of eclamptics and early referral to tertiary health care center when premorbid signs and symptoms develop, provision of transport under medical supervision to women who develop any serious obstetrical complication , provision of ample supply of essential drugs to every city , availability of proper intensive care facilities in tertiary care hospitals, generation of strict protocol for the management of eclampsia to be followed by junior staff and at the end availability of senior staff in all departments at any time when the need arises. The closer we follow this regime; the better will be the achievement.

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