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Research Article

A Clinical study of perinatal and Maternal complications in Eclampsia in a tertiary care Referral Centre – A Near Miss Obstetric catasthrope.

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Keywords

Eclampsia,
Maternal outcome,
Fetal outcome.

Abstract

Introduction: "Eclampsia still kills**"**, it is worth while to periodically review this major problem of obstetric care. With better antenatal care, early recognition and hospital treatment of severe pre-eclampsia patients, the incidence of eclampsia can be decreased. **Aims and objectives:** The present study was undertaken to find out maternal and perinatal mortality and morbidity rate in eclampsia and to identify the factors influencing maternal and perinatal outcome. The various factors influencing maternal and perinatal outcome were evaluated in the present study. **Results:** The incidence of eclampsia in our hospital was 1.91%, Most of the cases did not have regular antenatal checkup (64.3%), Majority of the patients belonged to lower socioeconomic group (85.6%), The incidence of maternal mortality in the present study was 9.1% & the common causes of death were cerebral haemorrhage & pulmonary oedema . Maternal mortality was highest (42.8%), when the number of convulsions were > 11 & high (9.4%) with convulsion delivery interval of more than 24 hours, The maternal mortality was nil in cases delivered abdominally when compared to vaginal delivery (0% Vs 5.2%), The perinatal mortality in the present study was 57.6% and prematurity was the most important cause of perinatal and neonatal deaths. Perinatal mortality was maximum, when the number of convulsions are in between 11-15(85.7%) & when the convulsion delivery interval was more than 24 hours (83.3%),Perinatal mortality was significantly high in antepartum eclampsia compared to postpartum eclampsia (61.7% Vs 23%), Perinatal mortality was very high (65.1%) when the maternal blood pressure was more then 160/110 mmHg & was more in vaginal delivery (64%), as compared to LSCS (16.6%). **Conclusion:** The incidence of eclampsia is high which is mainly due to the high referral of eclampsia cases, reflecting poor antenatal care. Early attention and intensive management are essential for improving the maternal and fetal outcome in eclamptic cases.

Introduction

"Eclampsia still kills**"**, it is worth while to periodically review this major problem of obstetric care[1].With better antenatal care, early recognition and hospital treatment of severe pre-eclampsia patients, the incidence of eclampsia can be decreased.ECLAMPSIA[2]: It is defined as a convulsive disease occurring in pregnant, parturient or puerperal women, Indicence[3,4,5,6,7] . The incidence in India is from 0.18% to 4.6%[9]. several risk factors have been identified as predisposing to the development of pre-eclampsia in different populations[8,9.] .TYPES OF ECLAMPSIA :[10.]Antepartum eclampsia (50%), Intrapartum eclampsia (30%),Postpartum eclampsia (20%), Intercurrent eclampsia AETIOLOGY[11,12.] The aetiology of eclampsia is not known. cerebral vasospasm and oedema are important causative factors. Revelant investigations [6, 13] done and appropriate treatment given with anti convulsants [8,14,15] anti hypertensive drugs [2,8,17.] If respiratory arrest occurs, prompt resuscitation should be performed[16].OBSTETRIC MANAGEMENT[8,12]:Once convulsions are controlled and the woman is stabilized, labour is induced with oxytocin given intravenously .

Caesarean section is done for eclampsia in 1) status eclampticus; 2) If the convulsions recur or are not controlled . Pritchard recommends pudendal or local anaesthesia for vaginal delivery & general endotracheal anaesthesia for caesarean section & most forceps deliveries. MATERNAL COMPLICATIONS[8:]Eclampsia and pre-eclampsia are the most important obstetric causes of maternal mortality.FETAL COMPLICATIONS[5:]The perinatal mortality ranges from 14.6% to 47.4%. PROGNOSIS[4]Various factors influence the prognosis in eclampsia.

Aim of the study

To note the incidence of eclampsia,To know the factors influencing perinatal & maternal outcome &To prevent maternal mortality and morbidity by knowing prognostic factors and by prompt intervention.

Material and methods:

All cases of eclampsia admitted to Mamata General Hospital attached to Mamata Medical College, Khammam from AUGUST 2012 to AUGUST 2014 were taken into this study. Inclusion Criteria: Patient with antepartum , intrapartum , postpartum convulsions till 8 days,patient on zuspan's regimen. Exclusion Criteria**:** Patient with convulsions due to epilepsy, Patients on calmpose, Menon's and Phenytoin regimen, On admission history was taken from the attendent and clinical examination was done. Detailed history was taken regarding the convulsions i.e., total number of convulsions, time of onset of first convulsion, interval between the convulsions, history of loss of consciousness and the time gap between the onset of convulsion and admission to the hospital,H/o of swelling of legs and face.

A thorough general and physical examination was done. An obstetric examination was done to note the duration of pregnancy, condition of fetus and whether the patient is in labor. In all cases following investigations were carried out:Haemoglobin estimation,Urine for albumin, sugar and microscopy,Blood urea,Serum uric acid,Serum creatinine,L F T,USG,Serum magnesium . INTERVENTIONS: General nursing care, fluid and electrolyte balance were maintained, urine output was monitored with an indwelling catheter,Medical Management:Anticonvulsants: TO keep the patient sedated and to prevent convulsions, $MgSO_4$ therapy was used (Zuspan's regimen) – 4gms of $MgSo_4$ in 20ml of 5% dextrose was given intravenously slowly over a period of 15-20 minutes and therapeutic level was maintained by IV infusion of 10gms of $MgSO_4$ in 500ml of 5% dextrose at a rate of 1gm/hr and it was continued for 24 hrs following delivery. The toxicity signs of $MgSO_4$ were carefully monitored like; absence of patellar reflex, decreased respiratory rate (less than 14/min), Antihypertensive, Antibiotics. Obstetric Management: If the cervix was favourable and the CPD was ruled out, labor was induced with either, syntocinon drip, ARM, Prostaglandin ., etc., and patient was allowed for vaginal delivery. Second stage is shortened by forceps or vacuum extractor. Lower segment caesarean section is done for eclampsia in cases of status eclampticus and if the convulsions recur or are not controlled . FOLLOW-UP: All the mothers were followed up for evidence of decrease in blood pressure, evidence of proteinuria or any other complications of eclampsia. All the babies delivered were followed up during neonatal period for complications.

Statistical analysis has been done using the Chi-square test.

OBSERVATIONS

A total number of 6,899 deliveries have been conducted in the Mamata General Hospital, Khammam from August 2012 to August 2014, out of which 132 patients had eclampsia. The incidence of eclampsia is 1.91%.

MATERNAL MORTALITY AND MORBIDITY**:**There were 12 maternal deaths out of 132 cases.The causes were :

TABLE -1

Cause of Death	**No. of Cases**	**Percentage**
Cerebral haemorrhage*	6	50.0
Pulmonary oedema	3	25.0
Acute renal failure	2	16.6
DIC	1	8.3
Total	**12**	

*CT scan has been done in only 1 case, Of the 12 maternal deaths, 6 patients died undelivered with in 3-6 hrs of admission. 4 of them died due to cerebral haemorrhage, one due to DIC and the other due to pulmonary oedema. 6 patients died following vaginal delivery – the cause of death being cerebral haemorrhage in 2, pulmonary oedema in 2, and acute renal failure in 2.IN RELATION TO FIRST FIT – ADMISSION INTERVAL: Majority of cases (53.8%) have presented more than 6 hours after onset of convulsions. Maternal mortality increases with increase in first fit-admission interval.X^2 = 18.8 , P<0.001 HS (Highly significant). SOCIO-ECONOMIC STATUS**:** majority of the patients belong to low socio-economic status (85.6%), 9% belong to middle class and 5.3% belong to high class. The majority of maternal deaths occurred in low socio-economic group (9.7%). However, statistically this is not significant .X^2 = 0.77, P=0.68, (Not significant). ANTENATAL CARE: Out of 132 cases, 64.3% were

unbooked and 35.6% were booked. While 11 maternal deaths (12.9%) occurred in unbooked cases and only 1 (2.1%) occurred in booked cases. This was found to be statistically significant. X^2 = 4.28 , P<0.05, Significant.BLOOD PRESSURE**:**Although maternal mortality was higher in patients with higher admission BP, this was found to be statistically not significant .X^2 = 3.67 , P<0.16, (Not significant). PROTEINURIA**:** Proteinuria was noted in all 132 cases (100%). OEDEMA: Out of 132 cases, oedema was not observed in 12 cases (9.1%). AGE:In patients below 25 years of age, maternal mortality was 6.4% (6 out of 94 cases) while it was 40% in patients more than 30 years age (2 out of 5 cases). This was found to be statistically significant .X^2 = 7.26 , P=0.05, Significant.PARITY:The maternal mortality increases as the parity increases. The maternal mortality was 20% in para 4 and above, as compared to 7.4% in Nulliparous women. But this was not statistically significant (P=0.56). TYPE OF ECLAMPSIA**:**Incidence (71.2%) and mortality (10.6%) were both high in antepartum eclampsia as compared to intrapartum and postpartum eclampsia. But this was not statistically significant .X^2 = 1.61 , P=0.45 (Not Significant). NUMBER OF CONVULSIONS:All the 12 patients who died were unconscious at the time of admission.Maternal mortality was significantly higher in patients who had 11 or more episodes of convulsions .X^2 = 14.2 , P<0.001, (Highly Significant). CONVULSION DELIVERY INTERVAL**:**Of the remaining 19 cases, 6 were undelivered and 13 cases were that of postpartum eclampsia.With a convulsion delivery interval of >24 hours, maternal mortality was 9.4% as against 2.3% when convulsion delivery interval was 13-24 hours and 0% when convulsion delivery interval was<12 hours. However this was not statistically significant. X^2 = 3.52 , P=0.17, (Not Significant). DURATION OF LABOR**:**Out of 132 cases studied, 6 patients died undelivered, LSCS was done in 12 patients, 13 cases had postpartum eclampsia and 4 cases presented in 2nd stage of labor. So, maternal mortality in relation to duration of labor was determined in only 97 patients.There is no statistically significant correlation between duration of labor and maternal mortality .X^2 = 0.14 , P=0.93, (Not Significant).RECURRENCE OF CONVULSIONS**:**In the present study, out of 132 cases, 2 patients had recurrence of convulsions. In both loading dose of 1 gm $MgSO_4$ was repeated for maintenance of convulsions. Serum magnesium levels in these two cases were found to be less than therapeutic levels (i.e., 2.4 mg/dl, 2.9 mg/dl).MATERNAL COMPLICATIONS:In this study out of 132 cases, 56 cases (42.4%) developed complications.The common complications were unconsciousness, transient oliguria, hyperpyrexia, and pulmonary oedema.The maternal mortality being 60%, 20%, 20%, 50% respectively.

PERINATAL MORTALITY & MORBIDITY CAUSES OF NEONATAL DEATH

TABLE-2

Cause of neonatal death	No. of Cases	Percentage
Birth asphyxia	6	26.0
Prematurity	10	43.5
Septicemia	3	13.0
RDS	3	13.0
Congenital heart disease	1	4.3
Total	**23**	

Out of 75 perinatal deaths, there were 23 neonatal deaths (30.7%), the most common cause being prematurity (43.5%). SOCIO-EC**ONO**MIC STATUS:Majority of perinatal deaths were in low socio-economic group 61%. This was found to be statistically significant .X^2 = 5.81 , P=0.05, significant. ANTENATAL CARE: Perinatal deaths were significantly higher in unbooked cases. X^2 = 42.2, P<0.001, (Highly Significant) AGE:Perinatal mortality was 51.5% when maternal age was≤25 years as against 80% when maternal age was > 30 years. However this is not statistically significant .X^2 = 4.95, P=0.18, (Not Significant). PARITY:The perinatal mortality increases as the parity increases. Perinatal mortality being 50.6% in primiparous women as against 100% in para 4 and above. This was found to be statistically significant. X^2 = 5.80, P=0.05, Significant. GESTATIONAL AGE**:**Perinatal mortality was significantly higher when gestational age was ≤36 weeks. X^2 = 23.7, P<0.001, (Highly significant). BLOOD PRESSURE**:**Perinatal mortality was significantly less in the normotensive cases . TYPE OF ECLAMPSIA**:**Perinatal mortality was significantly less in cases of postpartum eclampsia, but there was no significant difference between cases of antepartum and intrapartum eclampsia, X^2 = 6.95, P<0.05 , Significant. NUMBER OF CONVULSIONS:Perinatal mortality increases with the number of convulsions. This was found to be statistically significant, X^2 = 6.10, P<0.05, Significant. CONVULSION – DELIVERY INTERVAL**:**Out of remaining 19 cases, 13 patients had postpartum eclampsia and 6 patients died before delivery.Perinatal mortality increases with increasing convulsion delivery interval especially when convulsion delivery interval is >24 hours. Statistically this was found to be highly significant ,X^2 = 17.9, P<0.001, (Highly Significant).DURATION OF LABOR**:**Out of the remaining 35 cases, 6 patients were undelivered ,12 underwentLSCS, 13 patients had postpartum eclampsia, and 4 patients

presented in 2nd stage of labor.Although there is increase in the perinatal mortality with increase in the duration of labor, this was not statistically significant. X^2 = 2.08, P=0.135, (Not Significant).MATERNAL AND PERINATAL MORTALITY IN RELATION TO MODE OF DELIVERY:Perinatal mortality was significantly less in those delivered by LSCS (P<0.01). Although there were no maternal death in the 12 cases delivered by LSCS, this was found to be statistically not significant (P=0.42).

DISCUSSION

The incidence of eclampsia and the total number of deaths from eclampsia have come dramatically in developed countries. This has been achieved with improvements in prenatal care and management. However, in developing countries eclampsia still stands as one of the major complications of pregnancy.The incidence in the present study is 1.91% as against 2.79% and 1.85% reported by Arup Kumar Majhi (2001) and Nobis PN, (2002)[13] respectively. But it is very much higher in comparison to western reports. The higher incidence in the present study is due to, lack of proper antenatal care and also because the study is undertaken in a referral hospital.SOCIO-ECONOMIC STATUS:In this series, most of the women (85.6%) had come from the low socio-economic status. According to Arup Kumar Majhi (2001)[20], majority of the patients (82%) belonged to poor socio-economic status which is largely related with health consciousness and health and family welfare of the people.ANTENATAL CARE**:**In the present study, majority of the women (64.3%) were unbooked. Maternal and perinatal mortality in this group was higher. 92% of eclampsia patients in the study done by Agarwal 1983[22] and 82.3% patients in that of Arup Kumar Majhi 2001[20], did not have regular ANC's.It has been universally accepted that the adequate standard antenatal care has immense value in reducing the incidence of eclampsia by early detection of pre-eclampsia and its prompt management. Sibai et al (1981)[23] had pointed out nonpreventable eclampsia, the incidence of which was very difficult to reduce.HYPERTENSION, OEDEMA AND PROTEINURIA:In the present study , 9% were normotensive and 9% did not have oedema. According to Sibai Baha M. (1990)[24], 32% did not have oedema, 23% had relative hypertension, and 19% did not have proteinuria at the time of convulsions. Proteinuria is usually a late development in the course of pre-eclampsia.From the present study we can infer that, even in the absence of oedema, proteinuria, or hypertension, the patient may still develop eclampsia.In this study maximum maternal and perinatal mortality was found when the blood pressure was above 160/110 mm Hg. According to Chesley[25], the systolic blood pressure of more than 200 mm of Hg is included in Eden's criteria to denote the severity of eclampsia and the mortality increases with the severity of eclampsia.MATERNAL AGE AND PARITY**:**In this series 71.2% of victims were below the age of 25 years and 61.4% were nulliparous women. Though number of cases were more among primigravida and young age group. According to Agudelo – Agustinconde (1997)[26], although nulliparity and young maternal age are well accepted risk factors for eclampsia, they were not found to be associated with the development of complicated eclampsia. The increased incidence of severe illness in multiparous and older women with eclampsia may be related to the rising prevalence of essential hypertension that occurs with aging. Fisher et al performed kidney biopsies on both nulliparous and multiparous patients with pre-eclampsia. They found prevalence of chronic renal lesions in 16.3% and 51% respectively. These findings could explain the higher rate of complications found in eclamptic multiparous.TYPE OF ECLAMPSIA**:**In our series, majority of cases (71.2%) were of antepartum eclampsia. The maternal and perinatal mortality in antepartum eclampsia was 10.6% and 61.7% respectively which is similar to the findings of Varawalla Nermeen Y. (1989)[2].According to Dutta and Biswas (1978)[27] perinatal mortality rate in antepartum eclampsia was 49.4%, 32.9% in intrapartum and 15.2% postpartum eclampsia.Significant increase in perinatal mortality in antepartum and intrapartum eclampsia is probably due to increase in duration of labor and birth asphyxia. However the difference in maternal loss according to type of eclampsia was statistically of significant.NUMBER OF CONVULSIONS**:**As the saying goes, each fit brings the patient, step closure towards the grave, this study shows statistically significant correlation with maternal, perinatal mortality and the number of convulsions.The results were similar to those observed by Gouripada Dutta (1978)[27] and Swain S. (1993)[6].CONVULSION – DELIVERY INTERVAL:In the present series, convulsion delivery interval is directly proportional to maternal and perinatal mortality. How ever increase in maternal mortality with increasing first fit to delivery interval was statistically not significant. Similar observation have been made by Nanda Smiti (1989)[28] and Swain S. (1993)[6].The perinatal mortality increase when the interval between the first fit and the delivery increases, due to prolonged exposure to intrapartum asphyxia.DURATION OF LABOR:In this study, there was no much difference between duration of labor in relation to maternal mortality.Although statistically not significant, there is direct correlation between the perinatal mortality and duration of labor. This may be due to the simple reason that fetus is exposed to intrauterine asphyxia for a longer time.GESTATIONAL AGE: In the present series perinatal mortality was high (70.6%) when the duration of gestation was < 36 weeks , which was found to be highly significant (p< 0.001).Similar observations were made by Smiti Nanda (1989)[28]. Therefore prematurity is the main cause of high perinatal mortality.RECURRENCE OF CONVULSIONS:In the present series, out of 132 cases only 2 patients had repeat convulsion with zuspans regime. The magnesium levels in these two cases were less than therapeutic levels while receiving MGSO4 regime. Sibai (1981)44 observed that 10

out of 67 patients had repeat convulsion while on intravenous MGSO4 regime, serum magnesium levels in these cases being less than therapeutic levels.

The incidence of repeat convulsions in the present study (1.5%). was very less compared to the study of sibai (14.9%). Although the number of cases is too small to comment, monitoring of serum magnesium levels might be helpful in prevention of repeat convulsions.MODE OF DELIVERY**:**There is no general agreement as to the mode of delivery in eclampsia. Menon (1961) and Worley (1984) recommended vaginal delivery in eclampsia reserving caesarean section only for obstetrical reasons. On the other hand pritchard and Pritchard (1985), Chesley (1978) have favoured caesarean section to reduce maternal and perinatal mortality. In our study, also perinatal mortality was lowest (16.6%) in 12 cases where caesarean section was performed. However, maternal mortality in relation to mode of delivery was statiscally not significant.Maternal and perinatal mortality in eclampsia is still very high and no appreciable change has been observed in last 30 years. Menon (1961) reported a perinatal mortality of 30% and maternal mortality of 2.2%.In the present series, maternal mortality is 9.1% and perinatal mortality is 57.6%. Prematurity and asphyxia were the main causes of neonatal deaths. The high mortality rate in our series is probably due to late arrival of the patients (53.8%) and many in moribund condition. Considerable number of cases have come from far distance (80% from more than 70 kms). Delay in presentation is due to lack of proper transportation. And most of the cases had received haphazard combination of sedative and anticonvulsants in primary health centers where there is a little or no experience regarding the management of eclampsia. Moreover several patients suffered one or more seizures during their transfer to the hospital. So, proper control of convulsions and blood pressure before and during shifting the patient to higher centers may improve outcome in these cases.

CONCLUSION

Eclampsia still remains a major problem in developing countries. In the present series, the incidence of eclampsia is high which is mainly due to the high referral of eclampsia cases, reflecting poor antenatal care. Both maternal and perinatal mortality rate are still disappointing. One maternal death occurs in every 11 eclamptic women. Two off springs are lost in every 4 eclamptic mothers.

Early attention and intensive management are essential for improving the maternal and fetal outcome in eclamptic cases. Unless the social and educational status of women are uplifted and obstetric care is brought to the doorstep, no miracle can be expected.Moreover, this is a study done in referral centre and the actual situation in the society as a whole remains unclear.

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