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Research Article

Morbidities and Mortalities in Eclampsia Cases: A Study at Tertiary Hospital

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Keywords

- Eclampsia; Maternal and Perinatal Morbidity and Mortality

Abstract

Eclampsia is defined as development of convulsion or unexplained coma during pregnancy or postpartum in patients with signs and symptoms of preeclampsia after excluding the other causes of seizures and coma. It is associated with high maternal and fetal morbidity and mortality in both developing and developed countries. Hypertensive disorders complicate 5 - 10 % of all pregnancies. Eclampsia incidence is 0.3-0.9% worldwide.

Objectives:

• To analyze clinical profile and management of eclampsia.

• To know the maternal and perinatal outcome including morbidity and mortality of eclampsia cases.

Methods: Our study is Prospective observational study done over a period of 18 months (2012-2014).All women with eclampsia and those who had eclampsia following admission to Cheluvamba hospital during the study period were included and analyzed using the proforma.

Cheluvamba Hospital is Areferral centre attached to Mysore Medical College and Research Institute, Mysuru, Karnataka, India.

Result: During our study period there were 23169 deliveries. 140 women were cases of eclampsia. Incidence is 0.60%. Unbooked were 89(63.5%), 98(70%) were Primi gravida. 62 (44.3%) of them were below 20 years. 113(80.7%) had antepartum eclampsia, 7(5%) intrapartum and 19(13.6%) had postpartum eclampsia. One (0.7%) had both antepartum and postpartum eclampsia.

88(62.9%) women delivered vaginally with 52 PNM, and 52 (37.1%) women by LSCS with 14 PNM. Bishop's score <6 in 102 cases and >6 in 19 cases. Induction to delivery interval <6hrs 30(21.4%), 6-11hrs 35(25%), >12hrs 33(23.5%).

Convulsion to delivery interval <6hrs in16 (11.4%), 6-11hrs 42(30%) and >12hrs 64(45.7%).

60(42.8%) were term babies, 80(57.14 %) were preterm.91 (65%) babies were live births, 21(15%) still birth, 28(20%) IUD, 17(12.14%) neonatal death.

$MgSO_4$, the drug of choice was administered by Pritchard regimen.62 (44.3%) women received <45gms, 61women (43.6%) received between46gms and 60 gms and >60 gms17 (12.1%). There was only one case of repeat convulsions after the initiation of treatment with MgSO4 (both antepartum and intrapartum). She received 103gms.

Maternal complications included 12(8.6%) HELLP syndrome, 2(1.4%) suffered acute renal failure, 5(3.6%) had cerebrovascular accident, one had DIC. One (0.7%) had rupture uterus and underwent peripartum hysterectomy. 2(1.4%) developed status eclampticus. Case fatality rate 4(2.9%).

Conclusion: Morbidity and mortality associated with eclampsia are high. In our study, morbidities were close to 50% and mortality was 2.9%.Hence prevention of eclampsia by early detection of hypertension is essential. Good antenatal care, noting the risk factors and proper treatment using magnesium sulphate and antihypertensive, and early delivery is essential in preventing morbidity and mortality associated with eclampsia.

ABBREVIATIONS

HELLP Syndrome: Haemolysis Elevated Liver enzymes Low Platelet count; APH: Ante Partum Haemorrhage; PPH: Post Partum Haemorrhage; FOGSI: Federation of Obstetrics and Gynecology Society of India; $MgSO_4$: Magnesium Sullphate; ELSCS: Emergency Lower Segment Caesarean Section; PGE1: Prostaglandin E1; PGE2: Prostaglandin E2; IUFD: Intra Uterine Foetal Death; PNM: PeriNatal Mortality; UK: United Kingdom; DIC: Disseminated Intravascular Coagulation; PRES; Posterior Reversible Enchephalopathy Syndrome; CVA: Cerebro Vascular Accidents; ARF: Acute Renal Failure

INTRODUCTION

Hypertensive disorders complicate 5 to 10% of all pregnancies and together they constitute one of the deadly triad along with hemorrhage and infection that contributes greatly to maternal morbidity and mortality. Eclampsia is 3rd among the direct obstetric cause for maternal mortality [1].

Women in whom eclampsia develops, exhibit a wide spectrum of signs, ranging from severe hypertension (20-54%), severe proteinuria, and generalized edema to absent (16%) or minimal hypertension, no proteinuria and no edema [2]. Eclampsia was not found to be a progression from severe pre eclampsia [2].

Eclampsia is associated with high maternal and fetal morbidity and mortality. Maternal mortality in eclampsia is mainly due to HELLP Syndrome, cerebrovascular haemorrhage, Acute renal failure, coagulation failure, pulmonary edema APH (antepartum haemorrhage) and PPH (post partum haemorrhage) [3]. Hypertensive disorders in pregnancy are still a major cause of maternal death - 29.54%in FOGSI study [4].

Perinatal mortality occurs in 5 – 12 % of the cases in developed countries and 40% in developing countries. The most common cause of fetal death is prematurity and fetal asphyxia and acidosis. Perinatal morbidity is correlated strongly with preterm birth, abruptio placentae and fetal growth restriction [3].

AIMS AND OBJECTIVES

Objectives of our study were to analyze the clinical profile of eclampsia cases. To analyze the maternal and perinatal outcome including morbidity and mortality.

MATERIALS AND METHODS

Present study was a prospective observational study done over a period of 18 months (2012-2014). Women with eclampsia and those who had eclampsia following admission to Cheluvamba Hospital attached to Mysore Medical College and Research Institute.

During the study period all the eclampsia cases were included for the study. Cases were analyzed for clinical profile, managed with magnesium sulphate (Pritchards regimen) and antihypertensive drugs and analysed for maternal and perinatal outcome, studied them using proforma.

Inclusion Criteria

All cases of Antepartum, Intrapartum, Postpartum eclampsia during study period.

Exclusion criteria

- Convulsion due to epilepsy and other causes,
- Convulsion due to Central venous thrombosis,
- Other causes of convulsion.

RESULTS AND DISCUSSION

There were a total of 23169 deliveries during the study period. 140 cases of eclampsia were treated during the period. Incidence of eclampsia was 0.6%.

Antenatal care: 89(63.7%) were un-booked and 51(36.4%) cases were booked (Figure 1).

34Women (24.28%) were on treatment for hypertension before onset of convulsion.

Age: In the age group of 15 to 20 yrs62 cases (44.3%) , between 21-25yrs of age 57(40%), 26yrs -30 yrs of age 20(14%) and between 31-35 yrs of age group only one case(0.7%) (Figure 2).

Parity: Primigravida 98 cases (70%) and multigravida 42 cases (30%) (Figure 3).

Type of eclampsia: 113(80.7%) had antepartum eclampsia, 7(5%)intrapartum and 19(13.6%) had postpartum eclampsia .One (0.7%) had both antepartum and postpartum eclampsia (Figure 4).

Gestational age at onset of convulsion: 32(25.4%) were term and beyond, late preterm were64 (50.8%), early preterm23 (18.3%). 20weeks to 26 weeks were 7 cases (5.6%).

Number of convulsions before initiating treatment: 128(91.4%) women had less than 5 convulsions, between 6-10 convulsions in 10(7.14%) women and more than 10 convulsion in 2(1.4%) cases.

Convulsions to admission interval: 89(63.5%) women were brought to our institution less than 6 hrs, 22(15.7%) women between 6-11hrs and more than 12 hrs in 14(10%) cases.

Imminent sign: All women had imminent symptoms and few more than one symptom. 94(67.14%) had headache, 57(40.71%) blurred vision, 49(35%) vomiting, 14(10%) epigastric pain.

General condition on admission: 83(59.28%) were conscious, 51(36.4%) were drowsy and 6(4.28%) were unconscious.

Blood pressure at the time of admission: 58(41.4%) women had systolic blood pressure more than 160mmHg and41 (29.28%) women had diastolic blood pressure more than 110 mm of Hg.22(15.71) women were normo tensive at the time of admission.

Choice of antihypertensive: Nifidipine was used in 83(59.28%) women. 25(17.85%) women required labetalol along with nifidipine.

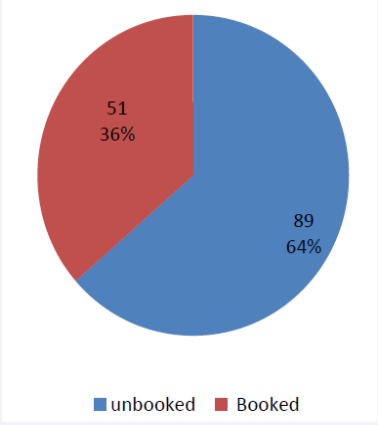

Figure 1 Unbooked, Booked.

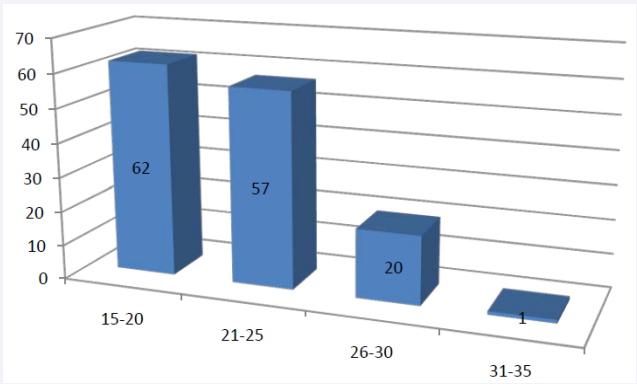

Figure 2 Age distribution of cases.

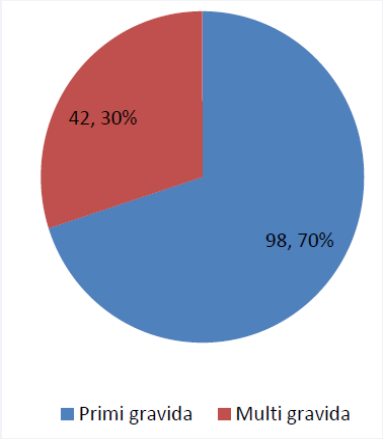

Figure 3 Number of prime gravidas and multigravidas.

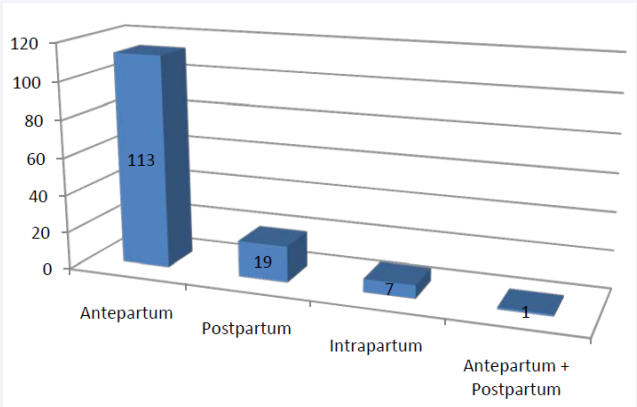

Figure 4 Occurrence of different types of eclampsia.

Anticonvulsant: MgSO4 was the drug of choice All women received Inj MgSO4 according to Pritchard regimen.62 (44.3%) women received <45gms, 61women (43.6%) received between46gms and 60 gms and 17 (12.1%) >60 gms.

11(7.85%) women required Phenytoin10mg/kg body weight as there was recurrence of convulsion. 2 (1.5%) women were not given follow up dose of MgSO4 as they developed respiratory depression following ELSCS.

There was only one case (0.7%) of repeat convulsions after the initiation of treatment with MgSO4 (both antepartum and intrapartum). She received 103gms.2 (1.5%) cases received phenytoin and midazolam as they developed hypotension after emergency LSCS.

Bishop score at admission: 102(72.85%) women had Bishop Score <5and required induction. 19(13.57%) had >6. PGE1 for28 (20%) women and PGE2 for 65(46.42%) women was used depending on gestational age.

Induction to delivery interval: 30(21.42%) women within 6hrs, 35 (25%) women between6-11hrs, 34(24.2%) >12 hrs.

Convulsion to delivery interval: 16 (11.42%) women delivered within 6 hrs, 42(30%) delivered within 6-11hrs and 64 (45.71%) >12hrs.

Mode of Delivery: In our study 88(62.9%) of women with eclampsia delivered vaginally, 52 women (37.1%) by ELSCS.

Perinatal Outcome: Out of 140 cases 91 were live births.60 (42.8%) were term, 80(57.14%) were preterm. There were 17(12.14%) neonatal deaths, 28(20%) IUFD, 21(15%) still birth.

Birth weight: 22(15.5%) had birth weight of >2.5 kg ,33(23.6%) had 2-2.5kg,35(25%) were 1.5 to 2kg.

Maternal Complications: Many eclamptic women had more than 1 complication in our study. 12 women had HELLP syndrome, 1 woman had previous LSCS with rupture uterus requiring peripartum hysterectomy and cerebrovascular accidents in 5,

Table 1: Different complications of eclampsia and number and percentage of complications.

Maternal complications	Number	percentage
HELLP syndrome	12	8.6%
DIC	1	0.7%
PRES	4	2.87%
ARF	2	1.4%
Aspiration	3	2.14%
CVA	5	3.6%
Iron sucrose transfusion	9	6.4%
Blood transfusion	27	19.28%
Abruptio placenta	3	2.14%
Postpartum Hemorrhage	2	1.4%
Rupture uterus with peripartum hysterectomy	1	0.7%
Fracture	1	0,7%
Hematoma	1	0.7%
Gluteal abscess	1	0.7%
Status eclampticus	2	1.4%

Abbreviations: HELLP syndrome: Haemolysis,Elevated Liver enzymes Low Platelet count; DIC Disseminated Intravascular Coagulation; PRES; Posterior Reversible Enchephalopathy Syndrome; CVA: Cerebro Vascular Accidents; ARF: Acute Renal Failure

abruption in 3, aspiration pneumonia in 3, ARF in 2, PPH in 2, DIC in one (Table 1). There were 4(2.9%) maternal case fatalities.

DISCUSSION

Eclampsia is a very serious complication of pregnancy responsible for high maternal and perinatal morbidity and mortality.

The incidence of eclampsia is 0.3-0.9% worldwide according to the systematic review on pre eclampsia [5]. In Europe around 0to0.1% and upto 4% in Nigeria , Brazilian studies showed 0.6%

In India, it is 1.5% [6]. In our study it was 0.60%. Incidence in our hospital is less because of good antenatal care in our region.

Eclampsia is more common in unbooked cases. In our study it was 63%. In study done by Sunitha et al., 45% of eclampsia women had no antenatal care and only 4% of cases in the study conducted at Tanzania [7,8]. Incidence is more in our study because they come as an emergency and referrals.

In the present study there was a risk factor of hypertension in previous pregnancy present in 6.4% cases. 24.2% of cases were already on hypertensive treatment. This gives the impression hypertension has been detected early and that might have contributed for good maternal and perinatal outcome.

Eclampsia is common in young primigravida. In our study it was 44.3%.Same as the incidence in Sunitha et al., study [7]. Primigravida were more in Esike COU et al., study 71.8% [9].

In our study there were 44.3% women below 20 years which was similar to other studies [7,8].

Antepartum eclampsia is more common than intrapartum and postpartum eclampsia. In our study antepartum was 80.8%, postpartum 13% and intrapartum 5%. This is correlating with other studies [3,7]. In other Indian study Sasmita Swain et al., type of eclampsia were 74.3% antepartum, 14.22%intrapartum, 11.43 % post partum. In U K 44%of eclampsia were post partum. Lower incidence of antepartum eclampsia in UK may be because of good antenatal care. Occurence of post partum eclampsia is less understood [6].

In our study 62.9% women delivered vaginally and 37.1% by caesarean section.

Higher incidence of vaginal deliveries were found in other studies - Gaddi Sumanet al., 80.99% , and Marina Khanum et al., 71%, Aparna Khan 52.38% [10-12].Vaginal deliveries are safer in eclampsia cases. Ndaboine et al., study there was higher incidence of LSCS, 66.22% [8].

Delivery by LSCS is associated with good perinatal outcome. Even in our study there was better perinatal outcome in LSCS group. Maternal and perinatal outcome according to type of delivery is shown in Figure (5)

However judicial, timely selection of cases for either vaginal delivery or LSCS helps in good maternal and perinatal outcome [6].

Perinatal outcome-Term babies were 60 (42.8%) and preterm babies were 80(57.14%).91(65%) were livebirth, IUFD were 28(20%), and stillbirths were 21(15%). Of 91 livebirths,

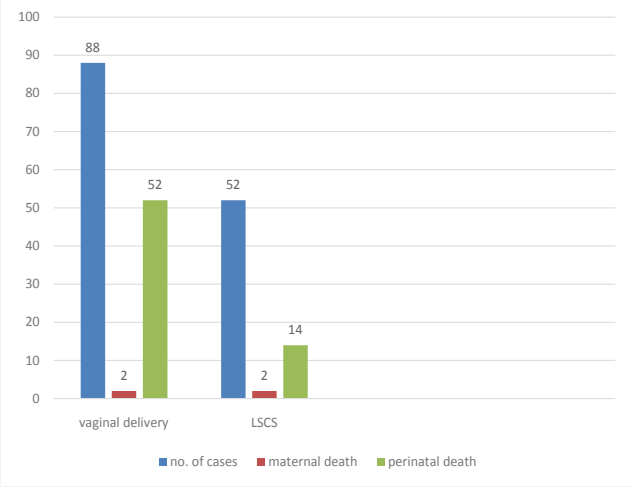

Figure 5 Occurrence of maternal death and perinatal mortality in vaginal deliveries and LSCS.

17(12.14%) had neonatal death. Our result can be comparable with Sasmita Swain et al., study [6].The perinatal mortality rate in our study was 47.4%.Birth weight of babies and perinatal outcome and mortality is shown in Figure (6).

PNM were more in babies who weighed<1.5 Kg. Majority of the PNM, 42 were less than 1.5Kg [13]. PNM was less in babies weighing >2.5Kg, only 5 PNMs. 6 PNMs in the category 1.5- 2kg.

The main medical treatments given to patients were Magnesium sulphate and antihypertensive drugs Nifidipine and Labetalol.

Magnesium sulphate is the drug of choice for prevention and treatment of eclampsia. It is a calcium antagonist and also vascular smooth muscle relaxant. It reduces the vascular resistance, reduces the vasogenic edema in the cerebal endothelium and increases the seizure threshold [14]. It helped in many ways to bring down the morbidity and mortality.

In our study dosage of MgSO received varied, 44.3% of eclamptic women received less than 45g, 43.6% received 46-60g and 12.1% received more than 60g. Only one patient received 103g as she had antepartum eclampsia and developed post partum eclampsia on 5th day of delivery.

2 cases were not given follow up dose of MgSO4, required phenytoin as both developed respiratory depression after emergency LSCS, this cannot correlate for adverse effect of Mg SO4. As anaesthetic drugs were also used. There were no serious complications associated with magnesium sulphate therapy.

Complications of eclampsia

HELLP syndrome was the most common complication in our study. In our study there were 12(8.6%) cases of HELLP syndrome 9 women recovered uneventfully, 3women had mortality. Eclampsia with HELLP syndrome had poor maternal and fetal outcome.

HELLP syndromecases in Sunita T H et al., study was 7% cases, in Tukur et al., there were 4.2% cases while in Ndaboine et

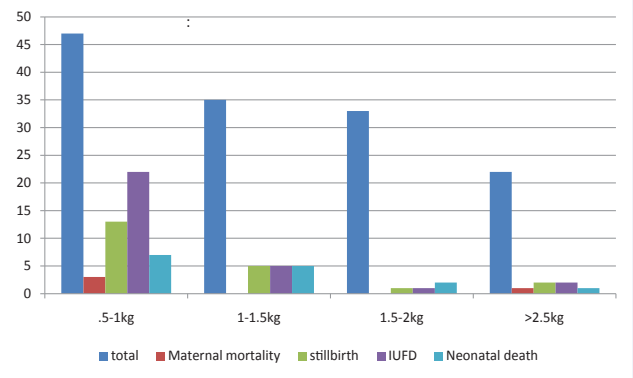

Figure 6 Relation between Birth weight and perinatal outcome and maternal mortality.

al., study there were 38% [7,8,15].

Next common complication was cerebrovascular accident -5 cases (3.6%) in our study.3 recovered and 2 had mortality. Ndaboine et al., study there were 6.5% cases [8].

4cases had PRES syndrome who recovered uneventfully. 2 women had ARF (acute renal failure), 1 recovered and 1 had mortality. 2 cases had atonic PPH and were managed medically. Abruptio placenta, PPH and aspiration pneumonia were the other complications.

In our study incidence of PPH and aspiration pneumonia was 2.1 % while none in Ndaboine et al., study [8].

In our study some women had more than 1 complication.1 woman with antepartum eclampsia and previous LSCS with 32 weeks of gestation presented with rupture uterus, she required peripartum hysterectomy.One woman with postpartum eclampsia had fracture humerus and shoulder dislocation. 2 cases had status eclampticus. One case had gluteal abscess following Pitchard regimen, requiring incision and drainage. There were 3 cases with twin gestation.

There were 4 maternal mortalities in the study. Clinical diagnosis for cause of death was made. They were, (1) postpartum collapse, (2) cerebrovascular hemorrhage following eclampsia, (3) pulmonary edema secondary to antepartum eclampsia, (4) hypoxic ischemic encephalopathy with multi organ failure secondary to eclampsia and HELLP syndrome. Case fatality 4/140 (2.9%).

Occurence of eclampsia is more in antepartum period and has poor maternal and fetal outcome, (Figure 7). Complication of eclampsia, maternal and perinatal outcome is shown in Table (2).

4 maternal mortality and 61 PNMs in our study.

Convulsion to delivery interval is important.64 (45.71%) delivered >12hrs after convulsion. Mortality was 3 among them. 42 (30%) between 6-11hrs-1 mortality and, within 6 hrs- no mortality. Lesser the convulsion to delivery interval lesser or no morbidity. When the interval between convulsion and delivery was more than 12hrs more complication and morbidity and mortality occurred. (Figure 8) and (Figure 9).

Bishops score below 6 were 102(72.85%) and maternal deaths were 4, PNM of 57 (40.71%).

Bishops score > 6 19(13.7%) no maternal mortality and PNM 6(4.28%). Favorable Bishops score has good outcome.

Case fatality rate (number of death/number of cases) of eclampsia ranges from0-1.8% in high income countries upto 17.7% in India [5]. In our study it was 2.9%.

Case fatality rate in our study was comparable with Ndaboine et al., study 2.6% and Esike COU 1.6% in Nigeria [8,9].

Our case fatality rate was lesser than Sunita et al., study- 4% and Tukur et al., it was11.7%, North India 8.4% [3,7,15].

2.6% case fatality rate is more in our institution as complicated cases were referred here.

SUMMARY

Eclampsia occurrence is high in age group between 15-20years, accounting for 44.3% of cases.

Incidence of eclampsia in our hospital is 0.60%, incidence

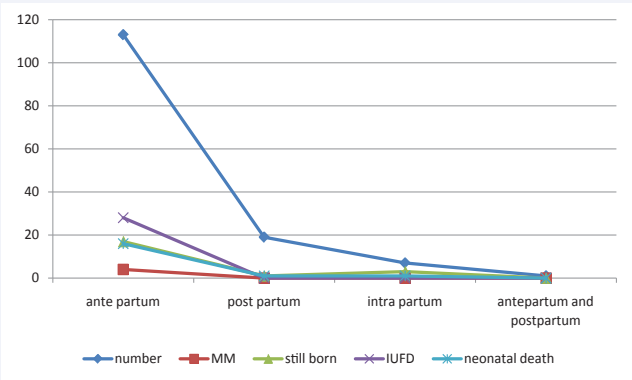

Figure 7 Relation of types of eclampsia with maternal mortality and perinatal outcome.

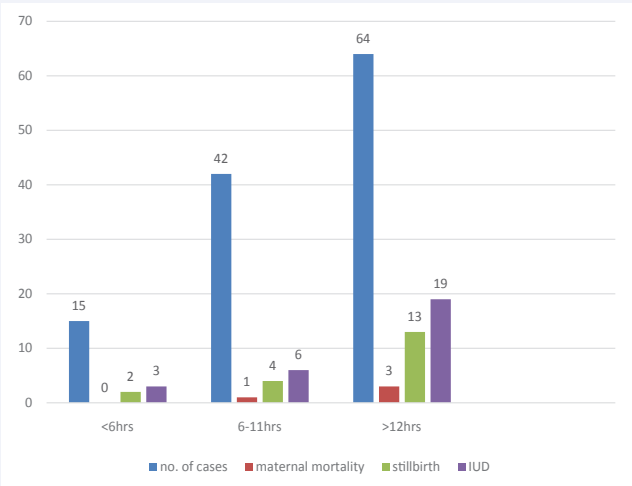

Figure 8 Occurrence of, maternal and perinatal mortality in relation to convulsion to delivery interval.

Table 2: Relationship between maternal complication and maternal and perinatal outcome.

	Maternal outcome			Fetal outcome			
	Number	Alive	Dead	Live birth	Still birth	IUFD	Neonatal death
HELLP syndrome	12	9	3	5	2	5	2
DIC	1	1	0	1	0	0	0
PRES	4	4	0	2	1	1	0
ARF	2	1	1	0	0	2	0
Aspiration	3	1	2	1	1	1	1
CVA	5	3	2	2	0	3	0
Iron sucrose transfusion	9	9	0	6	0	3	0
Blood transfusion	27	27	0	15	3	9	2
Abruptio	3	3	0	1	0	2	0
Postpartum Hemorrhage	2	2	0	2	0	0	0
Rupture uterus with peripartum hysterectomy	1	1	0	0	0	1	0
Fracture	1	1	0	1	0	0	0
Hematoma	1	1	0	0	0	1	0
Gluteal abscess	1	1	0	0	0	1	0
Status eclampticus	2	2	0	2	0	0	0
Maternal mortality	4	0	4	1	0	3	1

Abbreviations: HELLP syndrome: Haemolysis Elevated Liver enzymes Low Platelet count; DIC Disseminated IntravascularCoagulation; PRES: Posterior Reversible Enchephalopathy Syndrome; CVA: Cerebro Vascular Accidents; ARF: Acute Renal Failure; IUFD;Intra Uterine Fetal Death.

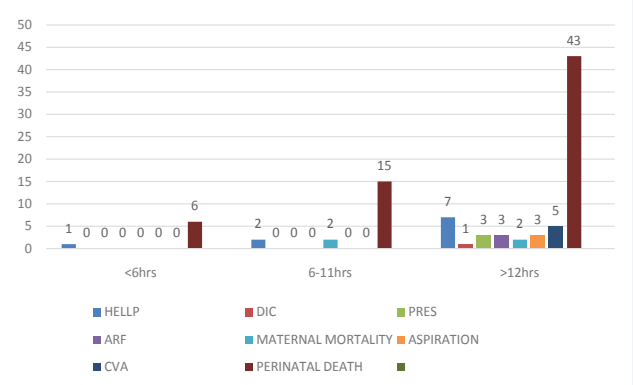

Figure 9 Occurrence of maternal complications in relation to convulsion to delivery interval.

is more is primigravida compared to multigravida. Antepartum eclampsia accounts for 80.8% of cases.

88 women delivered vaginally while 52 by LSCS, perinatal outcome is better with LSCS when compared to vaginal delivery.

PNM 40.7%.

Prematurity and low birth weight accounts for high perinatal morbidity and mortality.

HELLP syndrome was the most common complication, some women had more than one complications and Case fatality rate accounts to 2.9% in our study.

Lesser convulsion to delivery interval improves the mother and perinatal outcome.

We would have improved the strength of the study if we had included the risk factors for hypertensive disorders in pregnancy, in these cases.

CONCLUSION

Eclampsia is the leading cause of maternal mortality. It leads to morbidities affecting the health of the mother involving important organ systems. Early diagnosis of preeclampsia is the only way to achieve safe motherhood. Early initiation of Magnesium sulphate in severe pregnancy induced hypertension helps in reduction of Eclampsia. Early delivery after the convulsion reduces the morbidity and mortality in eclampsia.

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