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Original Research Article

A Retrospective Observational Assessment of Perinatal Outcome of Babies Delivered to Eclamptic Mothers

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Abstract

Aim: The aim of the present study was to assess the perinatal outcome with respect to maternal and neonatal characteristics and to evaluate the neonatal morbidity/ mortality.

Methods: The retrospective study was conducted in the Department of Pediatrics, Darbhanga Medical College and Hospital, Darbhanga, Bihar, India from February 2020 to January 2021. Total Eighty-two women presented with eclampsia over the study period resulting in an incidence of eclampsia of 9.8 per 1000 deliveries (0.98%), of which 75 women fulfilling inclusion criteria were included in the study.

Results: The majority of eclamptic mothers were primigravida (73.33%), Mean maternal age was 22 years. Mean gestational age at presentation was 34 + 6 weeks with a range of 28 weeks - 40 weeks and 36% of them reached term. Caesarean delivery was the commonest mode of delivery 56 (74.7%) among the subjects with eclampsia. The total number of births in our series was 76, which included 74 singleton births and 1 set of twins with a mean birth weight of 1.92 ± 0.66 Kg and a range of 0.99 Kg –3.16 Kg. Of 68 live born; 39 neonates required admission in the special /intensive neonatal care unit. Indications for admission were prematurity 15 (38.5%), sepsis 12 (30.8%), Intra-uterine growth restriction (IUGR) 12 (30.8%) and perinatal asphyxia 3 (7.7%). Of the total 75 pregnant women, 6 patients were presented with intrauterine death. 2 patients who had presented with live fetuses, had fresh still births and 2 patients had early neonatal deaths. Causes of neonatal death were extreme LBW/prematurity and neonatal sepsis. Less than optimum ANC, young age, nulliparity and premature delivery are contributory factors for adverse outcome.

Conclusion: Eclampsia among rural population of India still remains a significant risk factor for neonatal morbidities like preterm, LBW, IUGR and birth asphyxia. Young age, nulliparity, mode of delivery being vaginal and high maternal serum LDH levels were risk factors for adverse perinatal outcomes. This study emphasises the need to prevent development of eclampsia at a community level through optimal antenatal care.

Keywords: eclampsia, neonatal morbidity, rural population, very preterm

Introduction

Perinatal mortality is an important indicator of the status of maternal and child health, the conditions of obstetric care and the level of economic development of a community. [1] It includes stillborn babies (SB) of more than 28 weeks of gestation and deaths occurring within the first week of life (early neonatal deaths). [1] The perinatal mortality rate (PMR) reflects both the characteristics of reproductive health and the quality of antenatal care, delivery, and newborn care. [2] At the global level, an estimated 7.5 million perinatal deaths take place each year, most of which are in developing countries. [3,4] The perinatal mortality vary between different regions for instance, it ranges from less than 10 per 1,000 in most developed countries to up to 60 per 1,000 in certain regions of Asia and Africa. [3,4] Eclampsia is defined as the occurrence of fit or seizure in a patient with signs and symptoms of pre-eclampsia in the absence of underlying neurologic disease. [5]

Adverse perinatal outcomes of pre-eclampsia and eclampsia are mainly attributed to preterm delivery, which occurs secondary to maternal or foetal complications, intrauterine growth restriction (IUGR) and foetal death. [6] Eclampsia among rural population of India still remains a significant risk factor for neonatal morbidities like preterm, Low Birth Weight (LBW), Intrauterine Growth Retardation (IUGR), and birth asphyxia. [7]

Incidence of eclampsia varies between developing countries and developed countries. Though rare in developed countries incidence of eclampsia is not uncommon in India. Maternal death associated with hypertensive disorder of pregnancy contributes 10% of maternal death (Khan KS 2006 WHO). [8] Globally eclampsia is the fourth most common cause of maternal death, accounting for 12% of maternal mortalities. [9] The incidence of eclampsia in developed countries range from 1 in 2000 to 1 in 3448 pregnancies which is much lower than in developing countries like India. The incidence of eclampsia in India has been quoted as 1.56%. [9] Majority of cases of eclampsia are young primigravidas and those with no prior antenatal care. Eclampsia is still a major cause of maternal death in India (24.09%, FOGSI study). [10] Preeclampsia with its complications is responsible for 15.8% of maternal deaths in tertiary care centre in Gujarat. [11]

The aim of the present study was to assess the perinatal outcome with respect to maternal and neonatal characteristics and to evaluate the neonatal morbidity/ mortality.

Materials and Methods

The retrospective study was conducted in the Department of Pediatrics, Darbhanga Medical College and Hospital, Darbhanga, Bihar, India from February 2020 to January 2021. Total Eighty-two women presented with eclampsia over the study period resulting in an incidence of eclampsia of 9.8 per 1000 deliveries (0.98%), of which 75 women fulfilling inclusion criteria were included in the study.

All pregnant women presenting with ante- partum and intra-partum eclampsia and who got admitted to the labour ward during study period were included. Pregnant women with post-partum eclampsia were excluded.

The data was collected from the medical records of all the patients included in the study, available at the hospital for the duration of eleven months. Data regarding the demographic parameters of the mothers like antenatal check-up, gestational age (determined by last menstrual period or 1st trimester ultrasound), obstetric problems like preterm labour, mode of delivery were recorded in a structured questionnaire. Neonatal parameters were sex, gestational age, birth weight and the neonatal medical problems like respiratory distress syndrome, congenital pneumonia, meconium aspiration syndrome, perinatal asphyxia and evidence of sepsis were also recorded. During hospital stay neonates with respiratory distress, feeding intolerance, abdominal distension with signs necrotizing enterocolitis (NEC) and clinical signs of sepsis were observed. Preterm birth is defined as delivery before 37 completed weeks of gestation. Low birth weight (LBW) baby is labelled when born with birth weight < 2.5 Kg., birth asphyxia defined as baby born with APGAR score at one minute is < 7, early neonatal death (END) is labelled when neonatal death occurs within 7 days of postnatal period, and stillbirth is defined as delivery of dead foetus after 28 weeks of gestation. The collected data was processed through Microsoft Excel and tabulated in the form of tables and analysed in the SPSS (version 25.0) software for appropriate statistical tests.

Results

Table 1: Distribution of women according to age, parity, mode of delivery

Variable	Number	Percent
Age		
< 20 years	12	16
20-25years	50	66.67
> 25 years	13	17.33
Parity		
Nulli-parous	62	82.67
Multi-parous	13	17.33
Mode of Delivery		
Caesarean section	56	74.67
Vaginal	19	25.33

The majority of eclamptic mothers were primigravida (73.33%), Mean maternal age was 22 years. Mean gestational age at presentation was 34 + 6 weeks with a range of 28 weeks - 40 weeks and 36% of them reached term. Caesarean delivery was the commonest mode of delivery 56 (74.7%) among the subjects with eclampsia.

Table 2: Distribution of foetuses/new-born's according to different characteristics

Variable	Foetus (n=8)	Newborns (n=68)	Total (n=76)
Gestational Age			
<32 wks	2	10	12
32-37 wks	6	31	37
> 37 wks	0	27	27
Weight Category			
VV LBW <1.5 Kg.	5	16	21
LBW	3	35	38
NBW	0	17	17
AGA	4	52	56
SGA	4	16	20
Gender			
Male	4	34	38
Female	4	34	38

The total number of births in our series was 76, which included 74 singleton births and 1 set of twins with a mean birth weight of 1.92 ± 0.66 Kg and a range of 0.99 Kg –3.16 Kg.

Table 3: Neonatal clinico-investigative profile of the neonates at the time of admission

Extreme LBW/Prematurity	02 (5.13%)	Sepsis clinical	12 (30.8%)
SGA (Growth retardation)	12 (30.8%)	Positive CRP	08 (20.5%)
Very LBW	10 (25.64%)	Reduced total WBC count	06 (15.4%)
Respiratory distress	04 (10.3%)	Positive Blood culture	02 (5.1%)
Perinatal asphyxia	03 (7.7 %)	Increased HCT > 65%	02 (5.1%)

Of 68 live born; 39 neonates required admission in the special /intensive neonatal care unit. Indications for admission were prematurity 15 (38.5%), sepsis 12 (30.8%), Intra-uterine growth restriction (IUGR) 12 (30.8%) and perinatal asphyxia 3 (7.7%).

Table 4: Outcomes of foetuses/newborns in eclamptic mothers

Outcome	N
Intra uterine Death	6
Stillbirth	2
Early Neonatal Death	2
Late Neonatal Death	2

Of the total 75 pregnant women, 6 patients were presented with intrauterine death. 2 patients who had presented with live fetuses, had fresh still births and 2 patients had early neonatal deaths. Causes of neonatal death were extreme LBW/prematurity and neonatal sepsis.

Table 5: The effect of ante-natal care, maternal age, parity on perinatal mortality

Risk factor	IUD/Stillbirth		Early neonatal death (END)	
	Total births	Stillbirth (%)	Live births	END (%)
Antenatal care				
Optimum	9	0	19	0
< optimum	66	8	49	2
Maternal age				
< 20 years	12	3	09	0
20-25 years	50	5	45	2
> 25 years	13	0	14	0
Parity				
Nulliparous	62	7	54	2
Multiparous	13	1	14	0
Gestational age				
<32 wks	11	2	10	1
32-37 wks	37	6	30	0
> 37 wks	27	0	28	1

Less than optimum ANC, young age, nulliparity and premature delivery are contributory factors for adverse outcome.

Table 6: Risk factors for perinatal death

Risk factor	Survivors (n=66)	Stillbirth + END (n=10)	p-value
Maternal age (Mean + SD)	21.86 + 3.18	20.2 + 1.3	0.0066
Gestational age	35 + 2.99	33.1 + 2.56	0.052
Weight	2 + 0.64	1.31 + 0.41	0.0002
Mode of Delivery Vaginal	3/56 (5%)	7/19 (37%)	< 0.001
Maternal LDH	504.6 + 215	920.4 + 374	0.006

Lower maternal age, lower birth weight, mode of delivery being vaginal and high maternal serum lactate dehydrogenase (LDH) were associated with increased perinatal mortality.

Discussion

Eclampsia is commonly defined as new onset of general tonic-clonic seizure activity and/or unexplained coma during pregnancy or postpartum in a woman in the absence of underlying neurologic disease. It is the most dangerous complication of preeclampsia. [12] The exact mechanism(s) responsible for the development eclampsia remain(s) unclear. [13] In India, reported incidence of eclampsia varies from 1.82 to 3.82 %. [14-16]

The majority of eclamptic mothers were primigravida (73.33%), Mean maternal age was 22 years. Mean gestational age at presentation was 34 + 6 weeks with a range of 28 weeks - 40 weeks and 36% of them reached term. Caesarean delivery was the commonest mode of delivery 56 (74.7%) among the subjects with eclampsia. In contrast, vaginal delivery was the common mode of delivery in a conducted by Madhu S et al. [16] In our study, Eclampsia was seen in 36 % of patients at term gestation; which is different from a study done by Khanum M et al [17], wherein it was seen in 53% of patients at term gestation.

In this study, more preterm babies were born to eclamptic mothers (60.3%). This is comparable to a study done by Shaheen et al. which showed that 62.5% of babies were preterm. [18] Parveen and Akhter reported 59%. [19] Singhal et al. also reported preterm births to be 74.5% [20]; while Jha et al. found 50%[21] of preterm births in their studies. The total number of births in our series was 76, which included 74 singleton births and 1 set of twins with a mean birth weight of 1.92 ± 0.66 Kg and a range of 0.99 Kg –3.16 Kg. Of 68 live born; 39 neonates required admission in the special /intensive neonatal care unit. Indications for admission were prematurity 15 (38.5%), sepsis 12 (30.8%), Intra-uterine growth restriction (IUGR) 12 (30.8%) and perinatal asphyxia 3 (7.7%). Of the total 75 pregnant women, 6 patients were presented with intrauterine death. 2 patients who had presented with live fetuses, had fresh still births and 2 patients had early neonatal deaths. Causes of neonatal death were extreme LBW/prematurity and neonatal sepsis. Less than optimum ANC, young age, nulliparity and premature delivery are contributory factors for adverse outcome. Lower maternal age, lower birth weight, mode of delivery being vaginal and high maternal serum lactate dehydrogenase (LDH) were associated with increased perinatal mortality. Similar observation has been reported in other study.[22] Birth asphyxia was indication for admission in 3 (7.7%) newborns. In contrast, a study done by Yaliwal et al. have recorded birth asphyxia in 26% babies. [14]

Conclusion

Eclampsia among rural population of India still remains a significant risk factor for neonatal morbidities like preterm, LBW, IUGR and birth asphyxia. Young age, nulliparity, mode of delivery being vaginal and high maternal serum LDH levels were risk factors for adverse perinatal outcomes. This study emphasises the need to prevent development of eclampsia at a community level through optimal antenatal care.

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