Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/16969
DOI URL: http://dx.doi.org/10.21474/IJAR01/16969

RESEARCH ARTICLE

MATERNAL AND PERINATAL OUTCOME IN WOMAN WITH ANTEPARTUM ECLAMPSIA

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Manuscript Info

Manuscript History
Received: 22 March 2023
Final Accepted: 25 April 2023
Published: May 2023

Key words:-
Eclampsia, Maternal Outcome, Perinatal Outcome

Abstract

Introduction: The term eclampsia is derived from a Greek word, meaning "like a flash of lightening"[1]. Eclampsia is an obstetric enigma. However, the management of eclampsia still poses a fascinating challenge to the obstetrician, requiring the greatest skill, judgement and patience[2].The aim of this study to study the maternal and fetal outcome in woman with eclampsia.

Materials And Methods: Anobservational study conducted in patients with antepartum eclampsia in Department of Obstetrics and Gynaecology at Vanivilas hospital**,** Bangalore Medical College and Research Institute, Bangalore, satisfying inclusion and exclusion criteria were taken as cases.The study period was 18months (February 2021 to August 2022)All the findings were recorded in the proforma and analysed.

Results: A total of 106 patients satisfying both inclusion and exclusion criteria were included in the present study. Out of which, 46 patients(43.40%) were primigravida and 60 (56.60%) were multigravida. 54 (50.94%) of them underwent vaginal delivery and 52 (49.06%) patients underwent caesarean delivery. Most common indication for LSCS was unfavorable cervix. Maternal complications occurred in 10 patients (9.43%) and maternal mortality was 5.66% (6 patients).NICU admission was seen in 57 babies (58.16%) and neonatal death occurred in 11 babies (11.22%).

Conclusion: By analysing maternal and perinatal outcome measures in woman with eclampsia, measures can be taken to expedite delivery and hence improving the maternal and perinatal outcome.

Introduction:-

The term eclampsia is derived from a Greek word, meaning "like a flash of lightening"[1].

The onset of convulsions in a woman with pre-eclampsia that cannot be attributed to othercauses is termed eclampsia[3].

The incidence in India ranges from 1 in 500 to 1 in 30. It is more common in primigravidae(75%), five times more common in twins than in singleton pregnancies and occurs between the36th week and term in more than

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50%[1].Though it has almost been eradicated from the developedworld, it continues to be a major cause of maternal and fetal mortality and morbidity in thedeveloping countries. The real challenge of eclampsia has not been met. In spite of considerableprogress made in the field of obstetrics, the incidence of eclampsia and its consequentcomplications has not decreased significantly in our country over the past few decades.

Ideally, it is a preventable disease or almost so. Its incidence is still high in hospitals accepting unbooked cases. Faced with this reality, a plan of management has to be evolved. The exact pathophysiology leading to the occurrence of convulsions is still not yet understood, but it has been proven beyond doubt, that termination of pregnancy, removes the basic cause of disease.

Mode of delivery can either be vaginal or caesarean delivery, keeping the above factors in mind, the aim of this study is to study maternal and perinatal outcome in woman with eclampsia.

Materials And Methods:-

Study design:
Descriptive study

Study period:
18 months(February 2021 to August 2022)

Place of study:
Vanivilas hospital**,** Bangalore Medical College and Research Institute, Bangalore.

Sample size
As per study of vaginal delivery and caesarean section in antepartum eclampsia at tertiary care hospital by Kumari P et al, vaginal delivery was done in 40% of cases

Hence,
p= 0.40
q= 1 - p
q= 1 - 0.40 = 0.60
Z_α= 1.96
d = 10% of absolute precision

$$n = \frac{(Z_\alpha)^2 pq}{d^2}$$

$$n = \frac{(1.96)^2 (0.40 * 0.60)}{(10)^2}$$

n = 96
Considering 10% as dropout or loss to follow up or missing data, add 9.6
n = 96 + 9.6 = 105.6 = 106. **Hence complete sample size is 106**

Inclusion criteria:
Pregnant women >28 weeks of pregnancy with antepartum eclampsia
Patient who are willing to give informed consent.

Exclusion criteria:
Patient who are not willing to give informed consent.
Patient with known case of seizure disorder.

Methodology:-

106 patients with eclampsia were enrolled for the study, during the study period. At the time of examination, detailed history was taken and examination done, and the same recorded in proforma. Medical management was done as per the protocol of the study. The maternal and fetal outcome measures studied were as follows,

Maternal outcome
Mainly includes complications such as,

Postpartum hemorrhage
Abruptio placenta
Acute renal failure
Cerebral hemorrhage
Pulmonary edema
Transient blindness
Postpartum convulsiona
Maternal death if any

Neonatal outcome
APGAR <5 at 1 minute and 5 minute
Need for intubation or oxygen supplementation
Need for NICU stay
Live birth
Still birth
Neonatal death

Data Analysis:
Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency, and proportion for categorical variables. Data was also represented using appropriate diagrams like bar and pie diagrams.Continuous variables were analysed by Independent-samples I tests and expressed as the mean and standarddeviation.

IBM SPSS version 22 was used for statistical analysis.

Results:-

Table 1:- Descriptive analysis of age in study population (N=106).

Parameter	Mean ± SD	Median	Minimum	Maximum	95% C.I	
					Lower	Upper
Age	24.83 ± 4.39	24.00	18.00	38.00	23.98	25.68

The mean age was 24.83 ± 4.39 in the study population, minimum and maximum was 18 and 38 respectively with 95% C. I (23.98 to 25.68)

Table 2:-Descriptive analysis of gravida in the study population (N=106).

Gravida	Frequency	Percentages
Primi	46	43.40%
Multi	60	56.60%

Among the study population, 46 (43.40%) were Primi and 60 (56.60%) were Multi.

Table 3:- Descriptive analysis of parity in the study population (N=106).

Parity	Frequency	Percentages
Nulli	57	53.77%
Multi	49	46.23%

Among the study population, 57 (53.88%) were Nulli and 49 (46.23%) were Multi.

Table 4:- Descriptive analysis of number of convulsions in the study population (N=106).

Number Of Convulsions	Frequency	Percentages
1	28	26.42%
2	31	29.25%
3	31	29.25%
4	10	9.43%
5	3	2.83%
7	1	0.94%
8	1	0.94%

9	1	0.94%

In my study population, 28 patients (26.42%) had 1 episode of convulsion, 31 patients(29.25%) had 2 episodes of convulsion and 31 patients(29.25%) had three episodes of convulsion. One patient(0.94%) had 9 episodes of convulsion.

Table 5:- Descriptive analysis of fundoscopy in the study population (N=106).

Fundoscopy	Frequency	Percentages
Grade 1 HIN retinopathy	1	0.94%
Bilateral tortuous vessels	1	0.94%
Normal	81	76.42%
Not done	23	21.70%

Among the study population, 81 (76.42%) had normal fundoscopy, 1 patient had bilateral tortuous vessels(0.94%) and 1 patient had grade 1 HTN retinopathy(0.94%).

Table 6:- Descriptive analysis of mode of delivery in the study population (N=100).

Mode Of Delivery	Frequency	Percentages
Vaginal delivery	54	50.94%
Caesarean delivery	52	49.06%

Among the study population, 54 (50.94%) had vaginal delivery and 52 (49.06%) had Caesarean delivery.

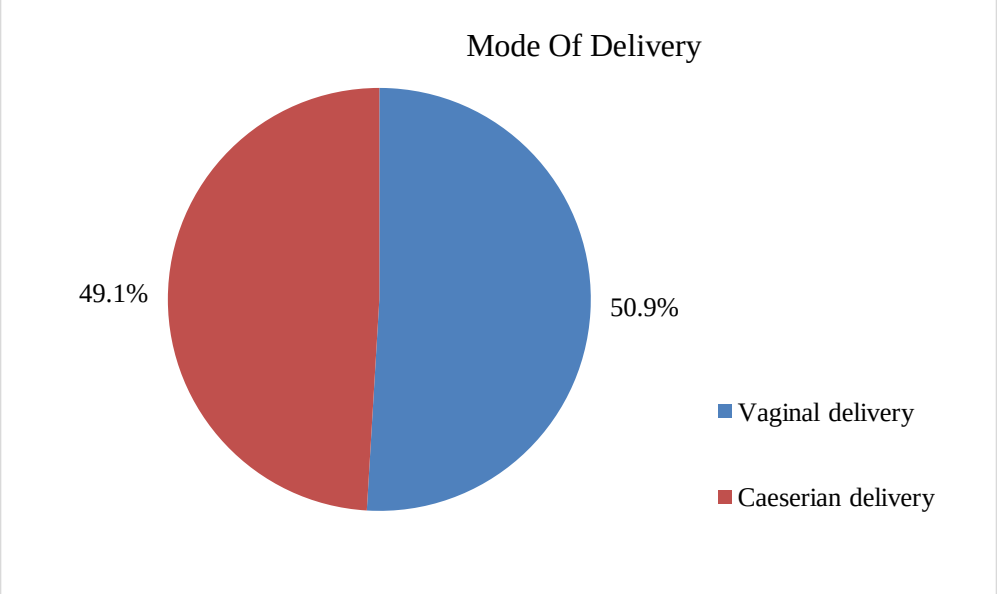

Figure 1:- Pie chart of mode of delivery in the study population (N=106).

Table 7:- Descriptive analysis of Indications of LSCS in the study population (N=106).

Indication Of LSCS	Frequency	Percentages
Failed induction	10	18.87%
Unfavourable cervix	18	33.96%
Previous LSCS	12	22.64%
Unfavourable cervix and poor GCS	4	7.55%
Return of spontaneous circulation	1	1.89%
Fetal distress	3	5.66%
Breech presentation	5	9.43%

The most common indication of LSCS was antepartum eclampsia with unfavourable cervix, in 18 patients accounting for 33.96% of patients. One patient had cardiac arrest and was revived, hence the indication of the same patient is Return of spontaneous circulation (1.89%).

Table 8:- Descriptive analysis of maternal ICU admission in the study population (N=106).

Maternal ICU Admission	Frequency	Percentages
Yes	27	25.47%
No	79	74.53%

Out of 106 patients, 27 (25.47%), required ICU admission.

Table 9:- Descriptive analysis of complications in the study population (N=106).

Complications	Frequency	Percentages
Abruption	1	0.94%
Abruption, Postpartum eclampsia	1	0.94%
MODS, Sepsis, AKI	1	0.94%
CVA, Pulmonary edema	1	0.94%
CVA, Pulmonary edema, HIE	1	0.94%
CVA, MODS, Sepsis, AKI	1	0.94%
CVA, AKIF, Sepsis	1	0.94%
CVA, AKI, DIC	1	0.94%
Pulmonary edema	5	4.72%
Pulmonary edema, Postpartum eclampsia	1	0.94%
Postpartum eclampsia	10	9.43%
AKI	4	3.77%
No complications	78	73.58%

Most common complication in my study population was postpartum eclampsia seen in 10 patients(9.43%). 78 patient(73.58%) had no complications.

Figure 2:- Bar chart of maternal complications in study population.

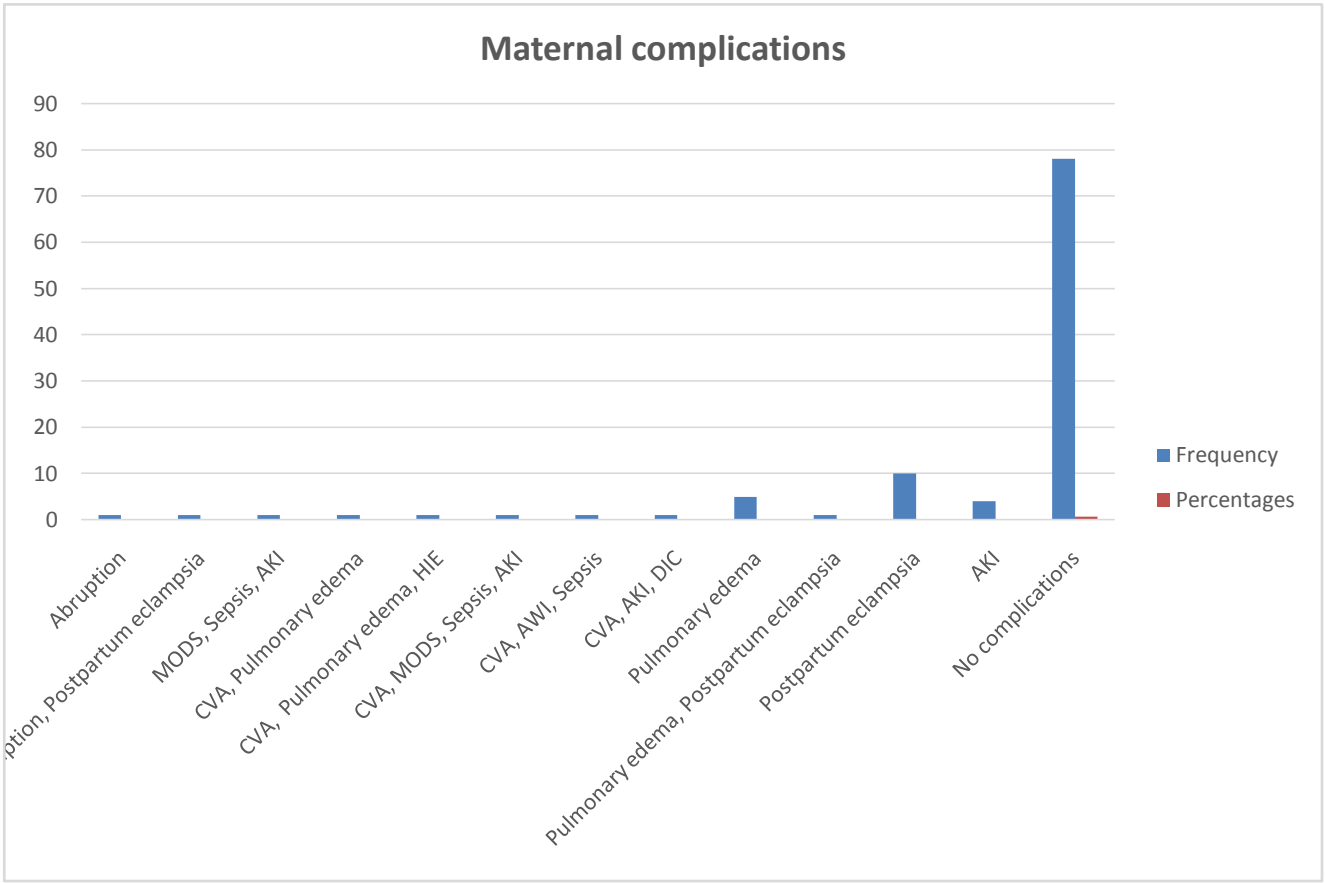

Table 10:- Descriptive analysis of need for intubation (patient) in the study population (N=106).

Intubation	Frequency	Percentages
Yes	19	17.92%
No	87	82.08%

Table 11:- Descriptive analysis of number of days of intubation in study population (N=21).

Parameter	Mean ± SD	Median	Minimum	Maximum	95% C.I	
					Lower	Upper
Number Of Days Of Intubation	3.48 ± 4.37	2.00	0.00	15.00	1.49	5.46

The mean duration of intubation was 3.48 ± 4.37, with minimum being 0.00, which means patient was intubated for less than 24 hours and maximum was 15 days, with 95% CI, between 1.45 to 5.46. The median was 2.00.

Table 12:- Descriptive analysis of ICU stay in study population (N=22).

Parameter	Mean ± SD	Median	Minimum	Maximum	95% C.I	
					Lower	Upper
ICU Stay	5.14 ± 4.48	4.00	1.00	15.00	3.15	7.12

The mean duration of ICU stay was 5.14 ± 4.48 days, with minimum being 1 day and maximum was 15 days, with 95% CI, between 3.15 to 7.12.. The median was 4.00.

Table 13:- Descriptive analysis of duration of hospital stay in study population (N=106).

Parameter	Mean ± SD	Median	Minimum	Maximum	95% C.I	
					Lower	Upper
Duration Of Hospital Stay	13.64 ± 4.99	13.00	1.00	28.00	12.68	14.60

The mean duration of hospital stay was 13.64 ± 4.99 days, with minimum being 1 day and maximum was 28 days, with 95% CI, between 12.68 to 14.60. The median was 13.00.

Table 14:- Descriptive analysis of Maternal death in the study population (N=106).

Maternal Death	Frequency	Percentages
Yes	6	5.66%
No	100	94.34%

Out of 106 patients, 6 patients had maternal death(5.66%).

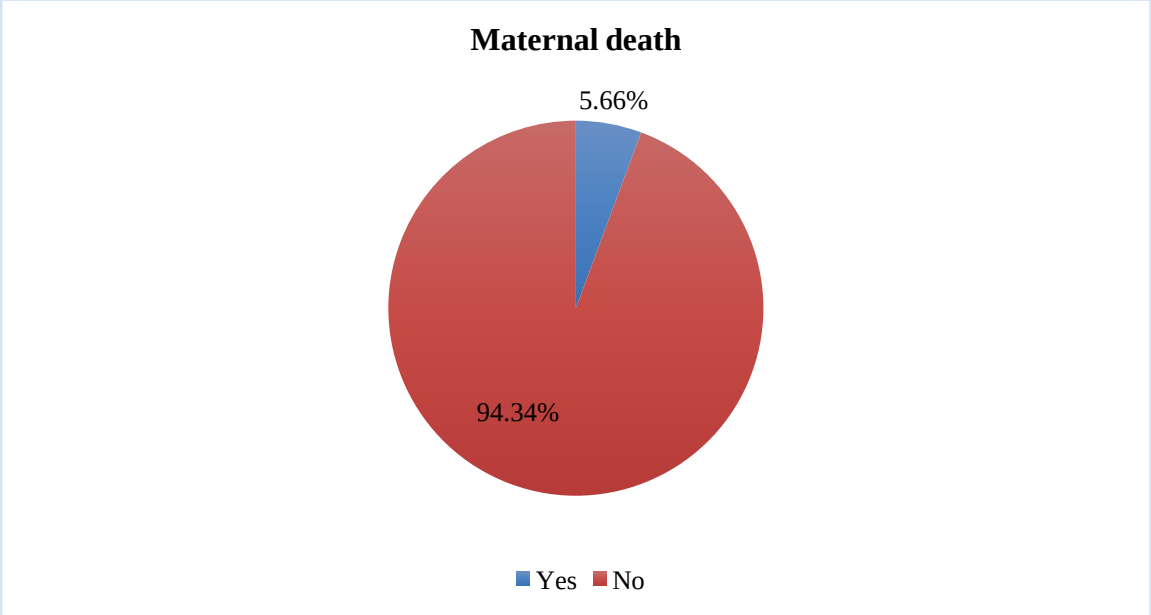

Figure 3:- Pie chart of Maternal death in the study population (N=106).

Table 15:- Descriptive analysis of cause of death in the study population (N=106).

Cause of death	Frequency	Percentages
CVA	1	0.94%
HIE with MODS	1	0.94%
ICH.DIC	1	0.94%
MODS/AKI/CVA/SEPSIS/APE	1	0.94%
Sepsis with septic shock with AKI	1	0.94%
Status eclamptic us/PRES/septic shock	1	0.94%
No	100	94.34%

Table 16 :- Descriptive analysis of birth weight (in kgs) in study population (N=106).

Parameter	Mean ± SD	Median	Minimum	Maximum	95% C.I	
					Lower	Upper
Birth Weight (In Kgs)	2.02 ± 0.59	2.00	0.90	3.73	1.91	2.13

The mean Birth Weight (In Kgs) was 2.02 ± 0.59, minimum and maximum was 0.90 and 3.73 respectively with 95% C. I (1.91 to 2.13)

Table 17:- Descriptive analysis of APGAR in study population (N=106).

APGAR	Mean ± SD	Median	Minimum	Maximum	95% C.I	
					Lower	Upper
1 Min	6.03 ± 1.13	6.00	3.00	8.00	5.80	6.26
5 Min	7.1 ± 1.06	7.00	4.00	9.00	6.89	7.31

The mean APGAR score at 1 min was 6.03 ± 1.13, minimum and maximum was 3 and 8 respectively with 95% C. I (5.80 to 6.26)

The mean APGAR score at 5 min was 7.1 ± 1.06, minimum and maximum was 4 and 9 respectively with 95% C. I (6.89 to 7.31)

Table 18:-Descriptive analysis of NICU admission in the study population (N=98).

NICU Admission	Frequency	Percentages
Yes	57	58.16%
No	41	41.83%

Out of 106 patients, 8 of them had IUFD, hence N = 98 i.e., 98 live births occurred, of which 57 babies (58.16%) required NICU admission, 41 babies (41.83%) did not require NICU admission.

Figure 4:- Pie chart of NICU admission in the study population (N=98).

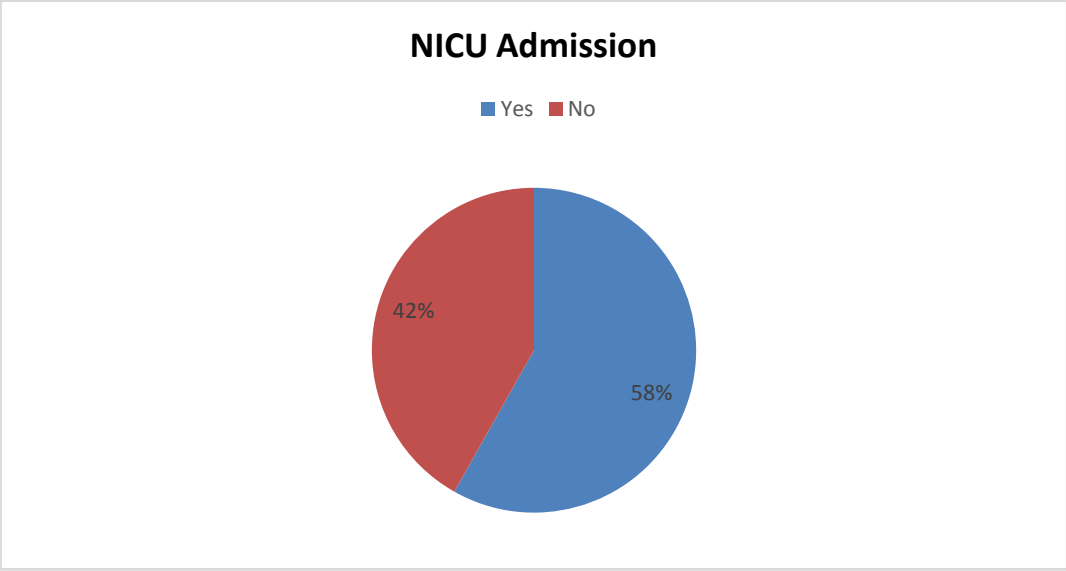

Table19:- Descriptive analysis of NICU stay in study population (N=66).

Parameter	Mean ± SD	Median	Minimum	Maximum	95% C.I	
					Lower	Upper
NICU Stay	8.47 ± 6.23	7.00	0.00	25.00	6.94	10.00

The mean duration of NICU stay was 8.47 ± 6.23 days, with minimum being 0 day (which means baby was in NICU was less than a day) and maximum was 25 days, with 95% CI, between 6.94 to 10.00 The median was 7.00.

Table 20:- Descriptive analysis of neonatal death in the study population (N=98).

Neonatal Death	Frequency	Percentages
Yes	11	11.22%
No	87	88.77%

Out of 98 live births, 11 babies had neonatal death(11.22%), and 87 babies (88.77%) were discharged.

Figure 5:- Bar chart of cause of neonatal death in the study population (N=11).

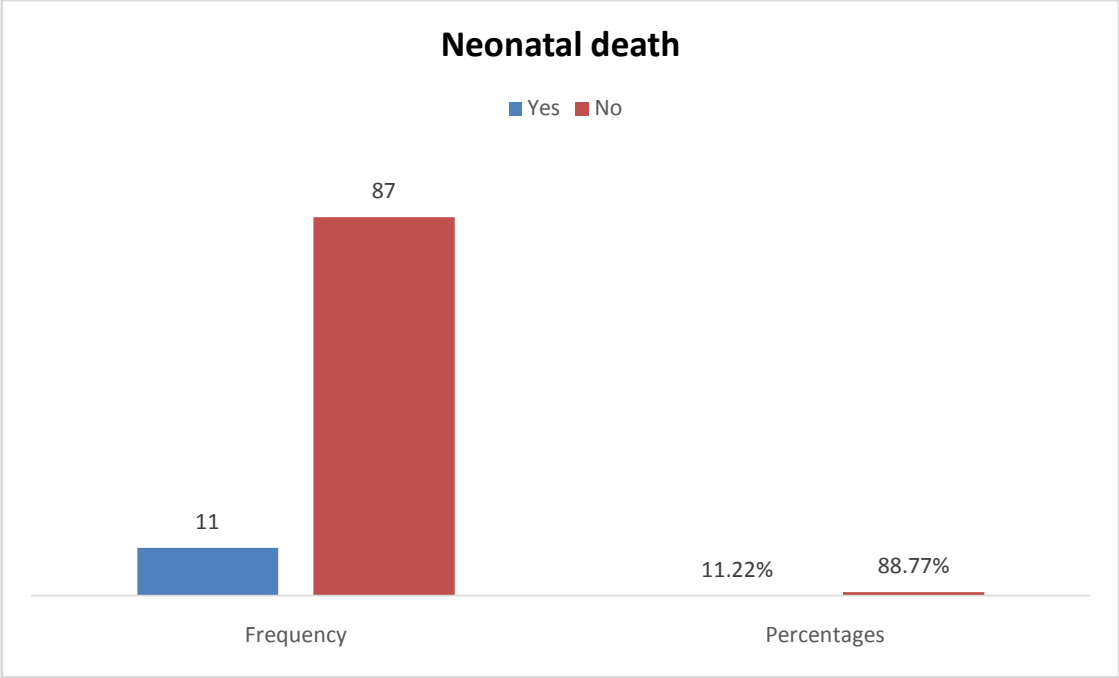

Table 21:-Descriptive analysis of cause of neonatal death in the study population (N=11).

Neonatal death	Frequency	Percentages
HIE	7	63.63%
Septicemia	2	18.18%
Respiratory distress syndrome	2	18.18%

The most common cause of neonatal death was HIE, which occcured in 7 babies (63.63%), followed by septicaemia and respiratory distress syndrome, in babies from each group, accounting to 18.18% each.

Table 22:- Descriptive analysis of birth weight (in kgs) in the study population (N=106).

Birth Weight (In Kgs)	Frequency	Percentages
<1 kg	2	1.89%
1 to 1.4 kg	18	16.98%
1.5 to 2.4 kg	58	54.72%
2.5 to 3.9 kg	28	26.42%

Majority of babies born had birth weight between 1.5 to 2.4 kg(54.72%) and 1.89% patients had birth weight <1 kg.

Discussion:-

Eclampsia is life threatening complication in pregnancy, associated with increased risk of maternal and fetal morbidity and mortality. Few decades ago, management of eclampsia was conservative, where sedatives, anticonvulsants and antihypertensives were used for control of convulsion. After cessation of convulsion, patient was induced. Caesarean section was reserved only for highly selected cases.

In the present study, 106 patients with antepartum eclampsia with more than 28 weeks period of gestation were studied.

Among 106 patients, 54 patients (50.94%) had vaginal delivery and 52 patients (49.06%) underwent caesarean section

There were 46 primigravidae in my study, accounting for 43.40% of study population and 60 patients were multigravidae (56.60%).

In the present study, there were 57 nulliparous patients (53.77%) and 49 patients were multiparous (46.23%).

In study population, 28 patients (26.42%) had single episode of convulsion, 31 patients (29.25%) had 2 episodes of convulsion, 31 patients (29.25%) had 3 episodes of convulsion, 10 patients (9.43%) had 4 episodes of convulsion, 3 patients (2.83%) had 5 episodes of convulsion, 7, 8 and 9 episodes of convulsion was present in one patient (0.94% each) each of the study population.
With the increase in number of convulsions, proportionately PNM risk is also increased. In a study by Mundle S[5](1998) and Swain S [6] (1993), similar results were obtained. If the convulsions are more than 10, there is bad prognosis for both the mother and baby, as quoted by D C Dutta[1].

Out of 106 patients, fundoscopy was done in 84 (78.30%) of patients, of which 81 patients had normal fundoscopy findings and 1 patient had bilateral tortuous retinal vessels and 1 patient had grade 1 hypertensive retinopathy.

Out of 106 patients, 8 patients had IUFD at admission (7.55%).

Out of 106 patients, 54 patients (50.94%), underwent vaginal delivery and 52 of them caesarean delivery (49.06%).

Out of the 54 patients who delivered vaginally, 41 patients were induced and 13 patients were in active labor (defined as cervical dilatation of more than 4cm) and with or without augmentation delivered vaginally.

Out of the 41 induced patients, 1 patient delivered within 6 hours of induction (2.44%), 18 patients within 7 – 12 hours of induction (43.9%) and 22 patients (53.66%) within 13 – 18 hours of induction.

In 52 patients who underwent caesarean section, 13 (23.53%) were induced, but due to indications like failed induction, fetal distress LSCS was done. In 39 patients (76.47%) without induction caesarean section was done.

The most common indication for LSCS was unfavourable cervix, which was the indication in 18 patients (33.96%), Previous LSCS in 12 patients. (22.64%), failed induction in 10 patients (18.87%), Breech presentation in 5 patients (9.43%), unfavourable cervix and poor GCS in 4 patients (7.55%), fetal distress in 3 patients (5.66%) and return of spontaneous circulation in 1 patient1.89%).

In a study done by Hakerwadi A V[7] , the most common indication for caesarean section was fetal distress (36.18%) followed by failed induction (20.6%).

Maternal ICU admission was required in 27 patients (25.47%). 19 patients (17.92%) required intubation. There were no complications in 78 patients (73.58%), 10 patients (9.43%) had postpartum eclampsia , 5 patients had pulmonary edema (4.72%), 4 patients had AKI (3.77%). The down listed complications were seen in 1 patient each(0.94% each), they are as follows,

1. Abruption
2. Abruption, postpartum eclampsia
3. MODS, Sepsis, AKI

4. CVA, Pulmonary edema
5. CVA, pulmonary edema, HIE
6. CVA, AKI, sepsis
7. CVA, AKI, DIC
8. Pulmonary edema, postpartum eclampsia.

In a study by Hakerwadi A V [7] , incidence of abruption was 19.6% and Sibai et al [8] study incidence of abruption was 20%.

Out of 106 patients, 6 patients had maternal death (5.66%), hence the mortality rate in my study is 5.66%. The cause of death in 6 patients is as follows,

1. CVA
2. HIE with MODS
3. ICH with DIC
4. MODS with AKI with CVA with sepsis with antepartum eclampsia
5. Sepsis with septic shock with AKI
6. Status eclampticus with PRES with septic shock

CVA was clinical diagnosis, it could not be confirmed by imaging as patient succumbed. In one patient PRES was diagnosed after MRI Brain.

Table 57:-Comparative incidence of maternal mortality to mode of delivery maternal mortality.

Author	Year	Maternal mortality VD	Maternal mortality CD
Mario Lopezllera[9]	1967	12	12
Shivasamboo[10]	1968	6	1.7
Mondal R N[11]	1991	15.48	8.06
Habeebullah S[12]	1995	7.10	4.30
Present study	2022	0	6

In the present study, live birth rate was (92.45%), of which 57 babies required NICU admission (58.16%), the most common reason being prematurity followed by respiratory distress syndrome followed by birth asphyxia.

The mean duration of NICU stay was 8.47 days, with minimum being few hours after life in babies who were in NICU only for observation, and the maximum duration of NICU stay was 25 days, these were preterm babies who required prolonged pre term care.

Neonatal death rate was 11.22% (11 babies). The most common cause of neonatal death was HIE, 7 babies (63.63%) succumbed due to HIE. The other cause of death was septicaemia in 2 babies (18.18%) and respiratory distress syndrome in 2 babies (18.18%).

The neonatal death rate figures were comparable to study done by Dandekar LM[116] (1992).

Out of 106 babies, 58 babies had birth weight between 1.5 to 2.4 kg (54.72%), 28 with birth weight between 2.5 to 3.9 kg (26.42%), 18 babies with birth weight between 1 to 1.4 kg (16.98%) and 2 of them had birth weight less than 1 kg (1.89%).

Conclusion:-

In antepartum eclampssia, by identifying factors affecting mode of delivery, early decision can be made to decide mode of delivery.

In case of Poor GCS or Bishop's score, caesarean section is preferred as early delivery reduces further deterioration of both maternal and fetal condition, improves maternal and perinatal outcome.

In my study, all patients had singleton pregnancy with cephalic presentation except 2 of them, who had breech presentation and caesarean section was done in them. Doppler was not done at admission, if available Doppler (umbilical artery Doppler) can also help in deciding mode of delivery.

Caesarean section should be performed at optimal time and not as last resort when conservative management has failed, hence my study helps in identifying the factors that affect mode of delivery.

Limitations Of The Study

1.The main limitation of my study was sample size.
2.Follow up was not done after discharge.

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