ISSN:0975-3583,0976-2833 VOL13,ISSUE05,2022

ORIGINAL RESEARCH ARTICLE

An Observational Study On Biochemical Changes And Maternal Complications Of Postpartum Eclampsia In A Tertiary Care Centre

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Running Title: Study on biochemical changes and maternal complications of postpartum eclampsia

ABSTRACT

Background: The word eclampsia is derived from a Greek word eklampsis meaning 'sudden development'. It is one of the important causes of maternal mortality. Hypertensive disorders of pregnancy (HDP) are a heterogeneous group of syndromes affecting 3–10% of pregnancies, and include preeclampsia (PE), eclampsia (E), gestational hypertension, and pre-gestational hypertension.

Materials and Methods: This study was a Hospital based Prospective observational study conducted among 200 eclamptic mother who got admitted in Dept. of Obstetrics and gynaecology, Burdwan Medical College and Hospital and satisfied the inclusion and exclusion criteria. Study was conducted from April 2020 to September 2021.

Results: In the present study 84 eclmaptic mothers 23 (27.3%) developed sepsis, 20 (23.8%) developed disseminated intravascular coagulation, 17 (20.2%) developed pulmonary, 15 (17.8%) developed renal and 9 (10.7%) had developed neural complications. maximum eclamptic mothers 101 (50.5%) were belongs to the age group of 20-29 years. 84.5% mothers had history of hypertension. 1% were deceased mothers without history of hypertension and 6% were deceased mothers with history of hypertension, 14.5% recovered mothers without

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history of hypertension and 78.5% with history of hypertension. All 14 deceased mothers had singleton pregnancy. The mothers who recovered mothers had 79.5% singleton and 18.5% with twin pregnancy

Conclusion: Many mothers developed serious complications namely sepsis, cerebral and pulmonary complications, renal failure etc. Thus monitoring of such mothers at regular intervals and proper ANC may help in preventing maternal morbidity and mortality as well as foetal mortality

Keywords: Biochemical changes, Eclampsia, Maternal complications

Introduction

Hypertensive disorders in pregnancy are defined as follows.[1]

1] Gestational Hypertension:- Systolic BP > 140mmHg or diastolic BP> 90mmHg diagnosed for the first time after 20 weeks of gestation in a previously normotensive patient No proteinuria BP returns to normal before 12weeks of postpartum

2] Pre-Eclampsia

a) Mild Pre-eclampsia- Gestational Hypertension BP ≥ 140/90 mm of Hg but ≤ 160/110 mm of Hg without any signs of end organ damage with Proteinuria (urinary protein excretion >300mg in 24hrs) OR Protein/Creatinine ratio of 0.3mg/dl or more OR Urinary dipstick > 1+

b) Severe Pre-eclampsia- SBP>160 mm Hg or DBP >110mmHg with any one of the following Platelet < 1Lac/microL Elevated serum transaminase levels AST or ALT (increased two times) Renal insufficiency (serum creatinine concentration more than 1.1mg/dl or a doubling of the serum creatinine concentration in the absence of other renal disease) Persistent headache or visual disturbances Persistent mid epigastric or right upper quadrant pain Pulmonary oedema

3] Eclampsia:- Seizures (generalized tonic-clonic convulsion) that cannot be attributed to other causes in a woman with pre-eclampsia

4] Superimposed pre-eclampsia on chronic hypertension;- New onset proteinuria> 300mg/24hrs in essential hypertensive women but no proteinuria before 20weeks gestation

5] Chronic Hypertension:-BP>140/90mmHg diagnosed before 20 weeks gestation and persistent after 12 weeks postpartum.

ECLAMPSIA can be of three types- Antepartum, Intrapartum, Postpartum. Postpartum eclampsia may be early(<48hrs) or late (>48hrs to 4 weeks after delivery).[2] Therefore, prevention of eclampsia rests on early detection and effective management of severe preeclamptic cases as in majority of cases eclampsia is preceded by pre-eclampsia. It has also been said that convulsion in postpartum period should be treated as eclampsia if not proven otherwise. Deaths can be prevented by providing timely and effective care to pregnant women with such complication.[3]

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The present study thus seeks to assess significant changes in liver function test, renal function test and Complete Blood Count in patients of postpartum eclampsia, to determine the incidence of maternal mortality in post-partum eclampsia to describe obstetric profile associated with postpartum eclampsia and finally to see the difference of clinical and biochemical parameters between recovered and deceased cases of post-partum eclampsia.

Materials and methods

Study Design: Hospital based Prospective observational study

Study Population: - All pregnant women admitted in the hospital for safe confinement and other post-partum eclampsia cases referred from other hospitals

Place of study: - Dept. of Obstetrics and Gynaecology, Burdwan Medical College and Hospital

Study duration: - 18 months from 1st April 2020 to 30th September 2021

Study area:-Patients from Purba Barddhaman, Paschim Barddhaman, parts of Bankura, Birbhum, Hooghly, Mursidabad, Jharkhand

Sample design: Women presenting with postpartum eclampsia will be questioned and examined with predesigned and pretested schedule and will be selected for study population with certain inclusion and exclusion criteria by serial sampling technique

Inclusion- criteria - 1) All the mothers who were admitted in our hospital for safe confinement and later presented with postpartum eclampsia. 2) Patients referred with complaints of post-partum eclampsia from other centres.

Exclusion criteria - 1) Patients not giving consent. 2) Patients who are known cases of seizure disorders or having other brain pathology 3) Patients having more than one comorbidities 4) Patients who have conceived with more than two foetus.

Data collection: Data were collected from indoor patient bed head tickets and personal interview from admission to discharge of the mother.

examination.

Ethical clearance: Ethical clearance and approval for conducting this study was obtained from the ethical committee of Burdwan Medical College and Hospital, Burdwan. Informed verbal consent was obtained from the patients participating in this study after full explanation of the study objectives.

Statistics : The statistical software JASP 0.13.1.0 was used for the analysis. An alpha level of 5% has been taken, i.e. if any p value is less than 0.05 it has been considered as significant.

Results

The last but most dreaded complication being maternal mortality, the incidence is 14 out of 200 eclamptic mothers, ie, 7%. 14 mothers died during their hospital stay. 70 mothers with the above mentioned complications Recovered mothers after a long duration of hospital stay with continuous efforts of multidisciplinary of group of doctors. 116 mothers did not develop any of the fatal complications and were discharged within short span of time.

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Fig 1 : Showing distribution of complications in 84 eclamptic mothers who have developed them.

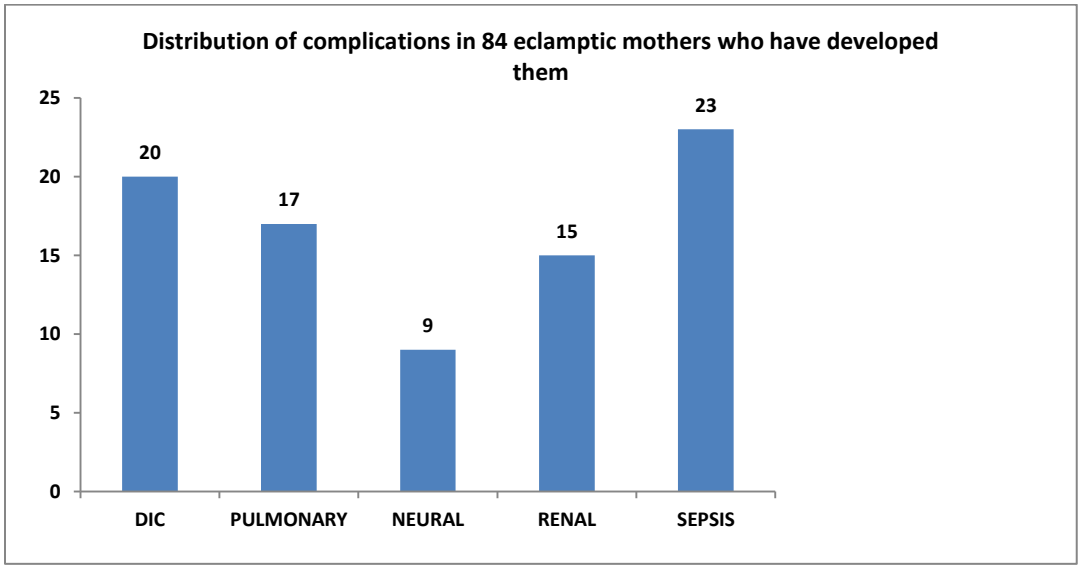

Figure 1 shows that out of 84 eclmaptic mothers 23 (27.3%) developed sepsis, 20 (23.8%) developed disseminated intravascular coagulation, 17 (20.2%) developed pulmonary, 15 (17.8%) developed renal and 9 (10.7%) had developed neural complications.

Table 1: Showing distribution according to age in eclamptic mothers

Age (in years)	No. of mothers
≤ 19	77 (38.5%)
20-29	101 (50.5%)
≥ 30	22 (11%)

Table 1 shows that maximum eclamptic mothers 101 (50.5%) were belongs to the age group of 20-29 years, 77 (38.5%) of mothers belongs to age group of ≤ 19 years and rest 22 (11%) mf eclpamptic mothers belongs go age group of ≥ 30 years.

Table 2: Showing distribution whether pregnancy induced hypertension was associated with post-partum eclampsia in deceased and recovered mothers

	Yes	No	P-Value
Deceased mothers	12 (6%)	2 (1%)	0.06
Recovered mothers	157 (78.5%)	29 (14.5%)	
Total	**169 (84.5%)**	**31 (15.5%)**	

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Table 2 shows that out of 200 mothers, only 84.5% mothers had history of hypertension. 1% were deceased mothers without history of hypertension and 6% were deceased mothers with history of hypertension, 14.5% recovered mothers without history of hypertension and 78.5% with history of hypertension. P-value is 0.6 which is statistically insignificant.

Table 3: Showing distribution whether postpartum eclampsia was associated with antepartum eclampsia in eclamptic mothers

	Yes		**No**	**P-Value**
Deceased mothers	8 (4%)		6 (3%)	0.3
Recovered mothers	103 (51.5%)		83 (41.5%)	
Total	**111 (55.5%)**		**89 (44.5%)**	

Table 3 shows that out of 200 mothers, only 55.5% had history of antepartum eclampsia3% and 4% were deceased mothers without and with history of antepartum convulsion respectively. 41.5% and 51.5% mothers recovered mothers without and with history of antepartum convulsion respectively. P-value is 0.3 without any statistically significant.

Table 4: Distribution of presence of various comorbidities in eclamptic mothers

	Normal	**Hypo-Thyroid**	**Heart Disease**	**Diabetes**	**Obesity**	**P-Value**
Deceased mothers	12 (6%)	1 (0.5%)	0	1 (0.5%)	0	0.54
Recovered mothers	112 (56%)	37 (18.5%)	7 (3.5%)	26 (13%)	4 (2%)	
Total	**124 (62%)**	**38 (19%)**	**7 (3.5%)**	**27 (13.5%)**	**4 (2%)**	

Table 4 shows that out of 200 mothers there were 38 (19%) cases of hypothyroidism, 27 (13.5%) cases of diabetes, 7 (3.5%) cases of heart disease and 4 (2%) cases of obesity, p-value was 0.54 which is statistically insignificant.

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Table 5 : Distribution according to the number of foetus conceived in single pregnancy in eclamptic mothers

	Singleton	Twin	P-Value
Deceased mothers	14 (7%)	0	0.12
Recovered mothers	159 (79.5%)	27 (13.5%)	
Total	**173 (86.5%)**	**27 (13.5%)**	

Table 5 shows that out of 200 mothers all 14 deceased mothers had singleton pregnancy. The mothers who recovered mothers had 79.5% singleton and 18.5% with twin pregnancy. p-value was 0.12 which is statistically insignificant.

Table 6: Distribution of mothers according to various biochemical changes

Various biochemical changes		No. of mothers
Haemoglobin (gm/dl)	≤ 8	14 (7%)
	>8	186 (93%)
Total leucocytic count (in thousand/cu.mm)	<4000	6 (3%)
	4000-11000	79 (39.5%)
	>11000	115 (57.5%)
Platelet count (per microliter)	≤ 1,00,000	56 (28%)
	>1,00,000	144 (72%)
Total Bilirubin (mg/dl)	≤ 1	121 (60.5%)
	>1	79 (39.5%)
SGOT (units/litre)	≤70	106 (53%)
	>70	94 (47%)
SGPT (Units/ Litre)	≥70	114 (57%)
	<70	86 (43%)
ALP (units/litre)	Normal	67 (33.5%)
	Raised	133 (66.5%)
Albumin (gm/dl)	Normal	142 (71%)
	Decreased	58 (29%)
Prothrombin Time (in secs)	Normal	163 (82.5%)
	Raised	37 (17.5%)

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Activated partial prothrombin time (APTT) (in secs)	Normal	185 (92.5%)
	Raised	15 (7.5%')
International Normalised Ratio (INR)	Normal	172 (86%)
	Raised	28 (14%)
LDH (unit/litre)	Normal	45 (24.5%)
	Raised	155 (77.5%)
UREA (mmol/l)	Normal	93 (46.5%)
	Raised	107 (53.5%)
Creatinine (mg/dl)	Normal	62 (31%)
	Raised	138 (69%)
Serum Uric Acid (mg/dl)	Normal	103 (51.5%)
	Raised	97 (48.5%)

Table 6 shows distribution of mothers according to various biochemical change. It reveled from the above table that raised levels are found in many eclamptic mothers.

Table 7: Distribution of mothers according to difference in various biochemical changes in deceased and recovered eclamptic mothers.

Various biochemical changes	**Deceased mothers Mean + SD**	**Recovered mothers Mean + SD**	**P-value**
Haemoglobin (in gm/dl)	9.0+1.2	8.7+1.6	< 0.05
Total leucocytic count	14.07+8.9	11.99+8.27	< 0.05
Platelet count (in thousands per microlitre)	114+34.45	121+27.84	< 0.05
Total Bilirubin (mg/dl)	3.1+4.9	2.1+2.9	< 0.05
SGOT (units/litre)	107.28+19.02	88.01+20.42	< 0.05
SGPT (unit/litre)	91.85+5.78	80.57+6.69	< 0.05
ALP (units/litre)	197.57+12.82	180.93+17.42	< 0.05
Albumin (gm/dl)	3.00 ± 0.1	3.05 ± 0.4	< 0.05
Prothrombin Time (in secs)	14.92 ± 0.75	13.99 ± 1.26	< 0.05
Activated partial prothrombin time (APTT) (in secs)	32.89 ± 2.55	25.45 ± 3.98	< 0.05
International Normalised Ratio (INR)	1.4 ± 1.34	1.04 ± 0.035	< 0.05
LDH (unit/litre)	1467 ± 25.09	825 ± 36.87	< 0.05
UREA (mmol/litre)	42.64 ± 16.34	30.56 ± 7.5	< 0.05

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Creatinine (mg/dl)	2.05 ± 0.2	1.06 ± 1.10	< 0.05
Serum Uric Acid (mg/dl)	7.3±2.7	8.9±3.1	0.76

Table 7 shows distribution of mothers according to difference in various biochemical changes in deceased and recovered eclamptic mothers. Difference in various biochemical changes in deceased and recovered mothers were found statistically significant except in case of Serum Uric Acid.

Discussion

Considering maternal complications, the two ultimate outcomes are maternal death and the mothers who have recovered mothers without or with morbidities like hypertension even after the puerperial phase. When the obstetric, demographic, biochemical and other associated factors were analysed between these two groups certain significant results have been obtained.

Out of 200 mothers 14 mothers died and 70 mothers developed complications but survived and 116 mothers survived without developing any complications. Therefore, the mortality rate is found out to be 7%. Out of 84 mothers, 23.8%, 17%, 9%, 15%, 23% developed DIC, pulmonary, neural, renal, sepsis complications respectively.

Out of 200 mothers 157 mothers were primi gravid and 43 belonged to multi gravid. 6.5% were recovered primi gravida, 0.5% recovered multigravida, 72% primi gravidas and 21 percent multigravidas have recovered respectively. P-value is 0.1 which means the outcome between the two groups i respect to gravid has no statistically significant difference.

38.5% mothers were below, 50.5% belonged to the age group of 20-29 years and 22% above 30 years. The mean age of recovered mothers and deceased mothers are 24.28 ± 2.9 years and 17.011± 4.33years respectively. The test is insignificant with p-value of 0.04 81% and 19% mothers had normal and abnormal BMI respectively. Out of 200 mothers 34.5% were preterm, 65.5% were term pregnancy. The average gestational age of the foetus of deceased mothers and recovered mothers are 36.42±2.76 weeks and 36.40 ± 3.23 weeks respectively. The p-value being 0.9 there is no statistically significant difference in between two groups.

The average interval between delivery of the baby and first episode of postpartum convulsion in deceased mothers and recovered mothers are 24.78±3.89 hrs and 21.87± 2.13 hours respectively. P-value is 0.62 which is insignificant. 72% mothers had only 1 episode of postpartum convulsion whereas 28% had more than one episodes of postpartum convulsion. The average no. of episodes of postpartum convulsion in deceased mothers and recovered mothers are 1.2 and 1.3 times respectively and it is statistically insignificant the p-value being 0.74

Out of 200 mothers, 48.5% underwent vaginal delivery while 51.5% went emergency caesarean section. 2.5% of mothers who were dead underwent caesarean section and 2.5% delivered vaginally. 49% of recovered mothers underwent caesarean section and 44% delivered vaginally. P-value is 0.22 which is statistically insignificant.

Out of 200 mothers all 14 deceased mothers had singleton pregnancy. The mothers who recovered mothers had 79.5% singleton and 18.5% with twin pregnancy. p-value of 0.12 which

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is insignificant. Out of 200 mothers, only 84.5% mothers had history of hypertension. 1% were deceased mothers without history of hypertension and 6% were deceased mothers with history of hypertension, 14.5% recovered mothers without history of hypertension and 78.5% with history of hypertension. P-value is 0.5 which is insignificant statically.

Out of 200 mothers, only 55.5% had history of antepartum eclampsia3% and 4% were deceased mothers without and with history of antepartum convulsion respectively. 41.5% and 51.5% mothers recovered mothers without and with history of antepartum convulsion respectively. P-value is 0.3 without any statistical significance. 78.5% of these 20 mothers were referred from primary or secondary health care centres.3% deceased mothers were referred from primary health centres and 4% came from home directly. 17.5% mothers who have recovered mothers came from home directly and 75.5 % were referred from other centres. P-value is 0.2 which is statistically insignificant.

44.5% of 200 mothers had no history of antenatal checkups. 2.5% deceased mothers never attended any antenatal checkup whereas 4.5% did turn up for antenatal checkup at least for once. 51% of recovered mothers attended antenatal checkup whereas 42% did not attend any antenatal check-up due to COVID situations as per patients' relatives. Out of 200 mothers, 48% developed postpartum convulsion in less than 24 hrs, 33.5% in between 24-48 hrs, 18.5% after 48hrs from the time of delivery. Out of 200 mothers, 6% of deceased mothers had no comorbidities, 0.5% had hypothyroidism and heart disease respectively. 56% of mothers who have recovered mothers had no comorbidities whereas 18.5%, 3.5%, 13%, 2% had hypothyroidism, heart disease, gestational diabetes mellitus and obesity respectively. P-value is 0.54. 7% of the mothers had hemoglobin $\leq$ 8gm/dl. The mean hemoglobin in deceased and recovered mothers are 9.0±1.2gm/dl and 8.7±1.6gm/dl respectively. P value is 0.4

39.5% mothers had total leucocytic count within normal range (4000-11000 cells/cu.mm), 57.5% had a range of more than 11000cells/cu.mm The mean total leucocytic count in deceased and recovered mothers are 14.07±0.7 and 11.99±8.27 (in thousands) per cu.mm3 respectively. P-value is 0.369. 28% mothers had platelet count $\leq$ 1,00,000 per microliter. The mean platelet counts in deceased and recovered mothers are 114±34.45 and 121±27.84 (in thousands) per cu.mm respectively. 60.5% mothers had serum bilirubin level within normal value, ie, <1gm/dl. The mean bilirubin in deceased and recovered mothers are 3.1±4.9 and 2.1±2.9 gm/dl respectively. P-value is 0.29.

The mean blood serum level of Aspartate aminotransferase in deceased and recovered mothers are 97.28±19.02 and 88.01±20.42 units per litre respectively. P-value is 0.897. 47% mothers had twice the normal range of this enzyme. The mean blood serum level of Alanine aminotransferase in deceased and recovered mothers are 91.85±5.78 and 80.57±6.69 units per litre respectively. P-value is 0.48. 43% mothers had more than twice the normal level of this enzyme

The mean blood serum level of alkaline phosphatase in deceased and recovered mothers are 197.57±12.82 and 180.93±17.42 units per litre respectively. P-value is 0.86. 66.5% mothers had raised enzymatic value

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The mean blood level of albumin in deceased and recovered mothers are 3.0±.1 and 3.0±0.4 gm per litre respectively. P-value is 0.7. 29% had decreased serum albumin value. Average Prothrombin time in deceased and recovered mothers are 14.92±0.75 and 13.99±1.26 secs respectively. p-value is 0.84. 17.5% mothers had raised prothrombin time. The mean Activated partial thromboplastin time in deceased and recovered mothers are 32.89±2.5 and 25.45±3.98 secs respectively. P-value is 0.97. Only 7.5% mothers had raised APTT value

The mean INR value in deceased and recovered mothers are 1.4±1.9 and 1.04±0.035 respectively. P-value is 0.69. 14% mothers had raised INR value. 77.5% mothers had raised serum lactate dehydrogenase value. The mean serum lactate dehydrogenase level in deceased and recovered are 1467±25.59 and 825±79.6 respectively. P-value is 0.039 which is significant

The mean serum urea level in deceased and recovered mothers are 56.64±16.34 and 30.56±10.68 mmol/litre respectively. P value is 0.046 which is significant. 53.5% mothers had raised serum urea level. The mean serum creatinine level in deceased and recovered mothers are 2.05±0.2 and 1.06±0.10 mg/dl respectively. P-value is 0.039 which is significant. 69% mothers had raised serum urea level 51.5% mothers had raised serum uric acid level.

Out of 200 mothers 3.5%, 1%, 29.5% had haemorrhage, ischaemia and PRES respectively in radiological findings of brain. The radiological imaging in deceased mother shows 1.5% normal, 2% PRES, 3.5% haemorrhage. In recovered mothers 64.5% shows normal imaging, 27.5% pres, 1% ischaemic. P-value is 0.03 which is significant

Lastly if the foetal outcome is considered, amongst the 14 deceased mothers 6 of them delivered IUFD babies whereas 8 had live birth. Out of 186 surviving mothers 54 of them delivered IUFD/ still born babies ad 132 recorded live birth. P-value is 0.54 which is insignificant. Out of 200 mothers, 30% of the babies delivered were IUFD/ still birth

According to NICE Guidelines 2010, at the booking appointment the following risk factors for preeclampsia must be determined namely age above 40 yrs, nulliparity, pregnancy of more than 10 years interval, multiple pregnancy, BMI > 30kg/m^4, pre-existing hypertension, pre-existing renal disease, previous preeclampsia or eclampsia[5]

According to Duckitt and Harrington risk factors can be assessed as follows- age, parity, previous eclampsia, family history of preeclampsia, multiple pregnancy, pre existing medical condition like insulin independent diabetes, chronic hypertension, renal disease, autoimmune disease, antiphospholipid syndrome, time interval between two pregnancies. [5]

Biolin categorized the risk factor as follows[5]

- Maternal specific risk factor (maternal age, family history and previous history of eclampsia)
- Partner related risk factor nulliparity, primipatrnity
- Presence of specific underlying disease (obesity, diabetes, chronic hypertension
- Pregnancy associated risk factors (foetus with chromosomal anomaly, hydatiform mole, multiple pregnancy)

All these risk factors reveal the complexity and heterogenicity of preeclampsia and eclampsia-

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With regard to the age as risk factor of eclampsia, extremes of childbearing age have been associated with Pre-Eclamptic Toxemia. Age>40 has two times more relative risk whereas nulliparity has 3 times greater relative risk

In a study **P.Nobis**[6] has shown that mortality of eclampsia in India is 1.5% - 2% whereas in our study we found that to be 7%

Small KR et al.[2] reported that 40% of post-partum eclampsia do not go through preeclamptic stages and have no clinical awareness.

Derley et al.[7] found that 63.2% had no antecedent history of hypertensive disorder in pregnancy, 4.6%, 9.2%, 18.4% where cases of Gestational hypertension, Chronic hypertension, preeclampsia respectively. In our study it has been shown that 20.5% had no history of hypertension

Alese OM [8]and colleagues [9]mentioned that out of 109 cases in their study, higher prevalence was among primi mothers. 78.5% in our study are primigravida and amongst deceased mothers 13 mothers are primigravida

According Duckitt multiple pregnancy is a risk factor. In our study there were 27 cases of multiple pregnancy

Gerda G Zeeman et al. [10] have demonstrated radiological changes in brain post eclampsia. 93% of women had reversible vasogenic oedema and 7% had cytotoxic oedema as seen in cerebral infarction without clinical neurological deficit. In our study it has been shown that 12 out of 200 mothers had radiological evidence of hemorrhage. 2 of them has ischaemia whereas 59 has PRES. Ribbermon in a study stated that higher incidence of eclampsia is seen in age > 40 years and <19 years where p-value is 0.034 which is highly significant. In our study we found that average age of deceased mothers is 17.38years and in recovered mothers it was 24years

Dubosky stated There were significantly increased biochemical changes in postpartum eclamptic mothers and the women mostly presented within 3rd to 10th day after delivery. In our study we found that mean time interval between first episode of postpartum convulsion and time of delivery was 36hrs

In a study by Xian di Biochemistry markers: the aspartate transaminase (AST), lanine transaminase (ALT), blood urea nitrogen and creatinine were significantly increased in eclampsia with HELLP syndrome group than eclampsia without HELLP syndrome group [(879 ± 337) U/L vs. (90 ± 27) U/L, (344 ± 83) U/L vs. (43 ± 11)U/L, (2245 ± 294) U/L vs. (485 ± 61) U/L, (14 ± 9) mmol/L vs. (7 ± 3) mmol/L, (140 ± 92) μmol/L vs. (83 ± 28) μmol/L, $P < 0.01$, $P < 0.05$], and the platelet was lower in eclampsia with HELLP syndrome group [(38 ± 13) × 10(9)/L vs (172 ± 46) × 10(9)/L, $P < 0.01$].

In a study by **Ahmed Maged**[11] that serum uric acid level, CRP, ALT, AST levels are high. Yifruberhan and colleagues of Ethiopia have shown that the majority of postpartum cases are anemic, thrombocytopenic and have derranged Liver Function [12]

In our study the levels of ALT, AST, ALP were high in both recovered and deceased mothers. The total bilirubin levels were greater than 1mg/dl in both of these groups.

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The levels of serum creatinine and urea and serum LDH were significantly high in deceased mothers.

Naresh KN et al. [13]demonstrated that the eclamptic mothers in India have a low platelet count and are anaemic. In our study we found that The average haemoglobin level is both the groups were below 10gm/dl, ie, the mothers are anaemic. The average platelet count in our study in both the groups were above 1 lakh per cu.mm

Biolin in his risk factors mentioned about preexisting comorbidities like diabetes, obesity, c hronic hypertension being one of the major risk factors of eclampsia. In our study we found that there were 4 cases of obesity, 27 cases of diabetes, 7 cases of heart disease and 37 cases of hypothyroidism. P-value is 0.52 which is insignificant.

Conclusion

The study concluded that changes in certain biochemical parameters may have a role in determining the severity of hypertensive disorders in pregnancy more specifically Eclampsia. Measurements of those biochemical parameters may help in preventing and predicting the disease even in an asymptomatic mother on the verge of developing eclampsia. The risk factors of hypertensive disorders of pregnancy must be identified as warning signs even at the grassroot level of the healthcare system. Thus monitoring of such mothers at regular intervals and proper ANC may help in preventing maternal morbidity and mortality as well as foetal mortality.

Acknowledgements

Authors would like to acknowledge the patients who participated in this research study.

Funding: No funding sources

Conflict of interest: Authors declare no conflicts of interest

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