



ASSESSMENT OF NEONATAL OUTCOMES IN ECLAMPTIC MOTHERS ADMITTED TO NMCH, PATNA, BIHAR

Paediatrics

Dr. Samiksha Sharma*

Senior Resident, Deptt of Pediatrics, N.M.C.H, Patna, Bihar.*Corresponding Author

Dr. Girijanand Jha Senior Resident, Deptt of Pediatrics, N.M.C.H, Patna, Bihar.

Dr. Binod Kr Singh Professor & HOD, Deptt of Pediatrics, N.M.C.H, Patna, Bihar.

Dr. Saroj Kumar Assistant Professor, Deptt of Pediatrics, N.M.C.H, Patna, Bihar.

ABSTRACT

Hypertension during pregnancy is a highly variable disorder unique to pregnancy and a leading cause of maternal and fetal/neonatal morbidity and mortality. Preeclampsia is a progressive disorder, in some conditions delivery is needed immediately for the benefit of mother and fetus. However, need for premature delivery has adverse effects on neonatal outcomes. Eclampsia still remains a significant risk factor for neonatal morbidities like preterm, stillbirth, IUGR, hematological and cerebrovascular anomalies. Hence based on above findings the present study was conducted for Assessment of Neonatal Outcomes in Eclamptic Mothers Admitted to NMCH, Patna, Bihar. Reviewed is the current literature for neonatal outcomes and potential strategies to optimize fetal outcomes in pregnancies associated with eclampsia. The present study was planned in Department of Pediatrics, Nalanda Medical College and Hospital, Patna, Bihar, India. The study was planned from March 2019 to October 2019. In the present study 50 females admitted with eclampsia or with pre-eclampsia but subsequently developing eclampsia were enrolled. Also the control females were also evaluated for comparative evaluation. The mothers were selected after matching the socio-demographic and nutritional profile. Mothers less than 28 weeks of gestation or suffering from chronic illness, giving birth to twin babies or babies with gross congenital malformation were excluded. The data generated from the present study concludes that Prevention of prematurity, treatment of morbidities & prevention of infection among infants should be done to reduce the PMR and improve perinatal outcome. Thus High risk pregnancy should be identified prospectively and then given special care, perhaps a major impact on overall perinatal loss could be reduced.

KEYWORDS

Eclamptic Mothers, Preeclampsia, Preterm, neonatal Outcomes Etc.

INTRODUCTION:

Ten percent of all pregnancies are complicated by hypertension. Eclampsia and preeclampsia account for about half of these cases worldwide, and these conditions have been recognized and described for years [1]. It is a multisystem disorder in pregnancy and a leading cause of maternal and fetal morbidity and mortality. Neonatal and infant mortality rates are higher in preterm infants than in term infants. [2, 3]

A study by Young and Colleagues determined the relative risk for mortality rate for each weekly estimated gestational age from 34-42 weeks using 40 weeks as the reference cohort [4, 5]. There are many adverse effects of eclampsia on neonatal outcomes, the common ones being

A) Risk of still birth - Still birth represents an important cause of fetal loss in neonates to eclamptic and preeclamptic mothers[6]. Although, greater than 90% of fetal deaths occur in the first 20 weeks of gestation, the rate of still birth is approximately 3 per 1000 live births beyond 28 weeks gestation. Evidence suggests that beginning at approximately 36 weeks, the risk of intrauterine fetal demise increases[7,8]. Eclampsia represents significant risk factor for intrauterine fetal demise, with estimated still birth rate of 21 per 1000[8,9]. In the setting of severe eclampsia, the risk of fetal death outweighs the benefits of pregnancy prolongation. However, in mild eclampsia, the fetal demise is more than 50% less than in severe eclampsia[10].

B) Intrauterine growth retardation- Preeclampsia, a condition with decreased uteroplacental blood flow and ischemia is a significant risk factor in development of IUGR and represents the most common cause of IUGR in nonanomalous infant. Data has shown that for any gestational age at birth, a weight below 10th percentile increases mortality[11,12]. Pregnancies complicated with severe eclampsia and preeclampsia shows birthweight 12% lower than expected while pregnancies with mild eclampsia and preeclampsia showed no change in weight gain than the normal ones[12,13].

C) Hematological effects- Maternal eclampsia or preeclampsia can result in neonatal thrombocytopenia. In pregnancies complicated by preeclampsia, thrombocytopenia is identified at birth or within first 2-3 days following delivery[14,15]. The pathogenesis is unknown[16]. One likely mechanism is that eclampsia and the resultant fetal hypoxia, has a direct depressant on megakaryocyte proliferation[17,18]. This is supported by studies showing that growth restricted neonates have

significant megakaryocytopenic defects without evidence of increased platelet destruction[18].

D) Bronchopulmonary dysplasia- Evidence suggests that abnormal placentation, characterized by shallow invasion of the maternal arteries, compromises uterine blood flow at expense of growing placenta and fetus[17]. The resulting hypoxia and ischemia may result in fetal angiogenesis[15,16]. however, BPD occurs in infants of mothers with severe eclampsia .

E) Neurodevelopmental outcome- The neurodevelopmental outcomes of exposed infants are highly variable[13,14]. Some evidence suggests that preeclampsia and eclampsia is associated with a decreased risk of cerebral palsy[16,17]. Some data suggests infants born to mothers with eclampsia have lower MDI scores at 24 months of age as compared to infants without maternal eclampsia[14].

Therefore, it shows that both eclampsia and preeclampsia leads to a number of adverse neonatal outcomes and is one of the main public health problems. Hence based on above findings the present study was planned for Assessment of Neonatal Outcomes in Eclamptic Mothers Admitted to NMCH, Patna, Bihar.

METHODOLOGY:

The present study was planned in Department of Pediatrics, Nalanda Medical College and Hospital, Patna, Bihar, India. The study was planned from March 2019 to October 2019. In the present study 50 females admitted with eclampsia or with pre-eclampsia but subsequently developing eclampsia were enrolled. Also the control females were also evaluated for comparative evaluation.

All the patients were informed consents. The aim and the objective of the present study were conveyed to them. Approval of the institutional ethical committee was taken prior to conduct of this study.

Following was the inclusion and exclusion criteria for the present study.

Inclusion Criteria: All pregnant women are at or beyond 28 weeks of gestation, with singleton pregnancy and in the age group between 20-40 years are included.

Exclusion Criteria: Women with chronic hypertension, renal disease,

cardio vascular disease, thyroid disease, liver disease, diabetes mellitus, twin pregnancy, pregnancy with gross congenital malformation and molar pregnancy are excluded. Blood samples were collected with the consent of the patient and centrifuged and analysed immediately for serum calcium and magnesium levels.

RESULTS & DISCUSSION:

Hypertension is one of the most common medical complication of pregnancy. It contributes significantly to the cause of maternal and perinatal morbidity and mortality. Hypertensive disorders of pregnancy predispose women to acute or chronic uteroplacental insufficiency, resulting in ante or intrapartum asphyxia that may lead to fetal death, intrauterine growth retardation and/or preterm delivery. [14]

Essential hypertension cases were less in this study, probably because majority of the mothers did not receive antenatal care and were admitted as emergency cases, hence no blood pressure record during the antenatal period was available. Seventy three per cent of the study cases were emergency admissions, the figures being similar to other studies. [15] The perinatal mortality was also higher in them as compared to the booked cases.

Table 1: Basic Details

Group	Group A	Group B
Group of	Eclampsia Females	Control Females
No. of Cases	50	50
Age:		
20 – 30 years	41	36
31 – 40 years	9	14
Parity:		
0	43	40
1	7	10
Antenatal Care:		
Less than 2 visits	6	41
More than 3 visits	44	9
Socio Economic Status:		
Lower	8	10
Middle	36	40
Upper	8	0
Weight kg	41 – 56	43 – 53

Table 2: Neonatal Outcomes

Group	Group A	Group B
Group of	Eclampsia Females	Control Females
No. of Cases	50	50
Preterm	20	11
Low Birth Weight	31	15
Intrauterine Growth Retardation	6	1
Birth Asphyxia	17	6
Hypoxic Ischemic encephalopathy	5	0
Early Onset Sepsis	5	2
Early Neonatal Death	2	0
Still Birth	4	2

Maternal morbidity includes severe bleeding from abruption placentae with its resulting coagulopathy, pulmonary edema, aspiration pneumonia, acute renal failure, cerebrovascular haemorrhage, retinal detachment and PRES. Perinatal mortality and morbidity is another impact factor in eclampsia patients, as the definitive treatment is the only termination of pregnancy irrespective of gestational age. The primary target in eclampsia is achieving control of convulsions, control of blood pressure and terminating pregnancy within optimal time frame. At all health providing levels appropriate use of anticonvulsants, anti-hypertensives along with safe culmination of pregnancy should be encouraged for these patients. If need is felt referral to a well-equipped higher center should be done promptly without wasting time along with by appropriate emergency obstetric care.

The major cause of intra uterine death was placental insufficiency producing severe intra uterine growth retardation. The major cause of still birth also is placental insufficiency. From our study it is seen that women with severe IUGR had poor neonatal out come. Respiratory

distress syndrome was the major neonatal complication followed by sepsis and convulsions. All these complications were seen to decrease with increasing gestational age rather than the birth weight. Steroids when given were definitely seen to help reduce the neonatal respiratory distress syndrome. Expectant management can be undertaken by experienced team offering continuous monitoring and care. It is best that such patients be moved to a tertiary care centre with advanced neonatal care facility before the management is offered.

The frequency of hypertensive disorders of pregnancy continues to remain high and majority are due to toxemia of pregnancy. Perinatal mortality is significantly high in mothers with hypertensive disorders. The frequency of both preterm and intrauterine growth retarded babies in higher in these mothers and birth asphyxia is the commonest neonatal complication.

There are limited number of therapeutic options in management of eclampsia with known benefit to fetus. Magnesium sulphate , medication for seizure prophylaxis has shown to have a neuroprotective effect on preterm neonates leading to decreased incidence of cerebral palsy. Antenatal administration of corticosteroids, 12-24 hours before delivery has been shown to decrease morbidity and improve survival rates of infants born before 34 weeks of gestation.

The nurse midwife plays a significant role in providing care for high risk pregnant women. She should recognize that the mainstay of treatment for pre-eclampsia remains ending the pregnancy by delivering the fetus (and the placenta). This can be a significant problem for the baby if pre- eclampsia occurs at 24-28 week of gestation. Thus, many strategies have been proposed to delay the need for delivery. The nurse midwife could assist with early recognition of the symptomless syndrome. She should also be aware of the serious nature of the condition in its severest form, adhere to agreed guidelines for admission to hospital, and have a great knowledge of investigations and the use of antihypertensive and anticonvulsant therapy. In addition, she can provide postnatal follow up and counselling for future pregnancies (Yoder et al., 2009). [18]

Eclampsia is associated with significant maternal and perinatal morbidity and mortality. The higher death is due to high percentage of the patient being unbooked; majority receive no therapeutic intervention until admission. The delay in the diagnosis, and early detection of warning symptoms is preceding eclampsia, like, edema, headache, nausea, vomiting, epigastric pain, blurring of vision and thereby delay in management, leading to various complications and resulting high mortality and morbidity. Maternal and newborn deaths due to preeclampsia/ eclampsia are preventable: by increasing community awareness about the condition, improving antenatal care quality, and scaling up proven best practices to prevent mild preeclampsia's escalation to severe pre-eclampsia and eclampsia. By detecting and managing pre-eclampsia, judiciously, thus preventing eclampsia, can improve the survival rate of women and babies in developing countries.

CONCLUSION:

There has been a lack of consideration earlier to the complications of premature delivery. However , the potential of eclampsia to disrupt mechanisms regulating fetal growth and development, a better understanding of pathophysiology of disorder will allow us to develop strategies to prevent morbidities and mortalities of neonates . The data generated from the present study concludes that Prevention of prematurity, treatment of morbidities & prevention of infection among infants should be done to reduce the PMR and improve perinatal outcome. Thus High risk pregnancy should be identified prospectively and then given special care, perhaps a major impact on overall perinatal loss could be reduced.

REFERENCES

- Douglas KA, Redman CW. Eclampsia in the United Kingdom. *BMJ*. 1994 Nov 26. 309(6966):1395-400.
- Nodler J, Moolamalla SR, Ledger EM, Nuwayhid BS, Mulla ZD. Elevated antiphospholipid antibody titers and adverse pregnancy outcomes: analysis of a population-based hospital dataset. *BMC Pregnancy Childbirth*. 2009 Mar 16. 9:11.
- Bolte AC, Dekker GA, van Eyck J, van Schijndel RS, van Geijn HP. Lack of agreement between central venous pressure and pulmonary capillary wedge pressure in preeclampsia. *Hypertens Pregnancy*. 2000. 19(3):261-71.
- Reddy A, Suri S, Sargent IL, Redman CW, Mutukrishna S. Maternal circulating levels of activin A, inhibin A, sFlt-1 and endoglin at parturition in normal pregnancy and preeclampsia. *PLoS One*. 2009. 4(2):e4453.
- Banerjee S, Randeve H, Chambers AE. Mouse models for preeclampsia: disruption of redox-regulated signaling. *Reprod Biol Endocrinol*. 2009 Jan 15. 7:4.

6. Cadden KA, Walsh SW. Neutrophils, but not lymphocytes or monocytes, infiltrate maternal systemic vasculature in women with preeclampsia. *Hypertens Pregnancy*. 2008. 27(4):396-405.
7. Janeczko LL. Formal Testing Fails to Confirm Cognitive Problems Years After Eclampsia or Preeclampsia. *Medscape*. Feb 24 2014.
8. Postma IR, Bouma A, Ankersmit IF, et al. Neurocognitive functioning following preeclampsia and eclampsia: a long-term follow-up study. *Am J Obstet Gynecol*. 2014 Jul. 211(1):37.e1-9.
9. Naeye RL, Friedman EA. Causes of perinatal death associated with gestational hypertension and proteinuria. *Am J Obstet Gynecol* 1979; 133: 8-10.
10. Deorari AK, Arora NK, Paul VK, Singh M. Perinatal outcome in hypertensive disease of pregnancy. *Indian Pediatr* 1985; 22: 877-881.
11. Barton JR. and Sibai BM. (2008): Prediction and prevention of preeclampsia. *ObstetGynecol*; 112(2Pt1): 359-372.
12. Haddad B. and Sibai BM(2009): Expectant Management in Pregnancies with Severe Pre-eclampsia. *Semin Perintol*:33:143-151.
13. Yoder SR ., Thornburg LL., Bisognano JD. (2009) : Hypertension in pregnancy and women of childbearing age.
14. Mattar F, Sibai BM. Eclampsia. VIII. Risk factors for a population-based hospital dataset. *BMC Pregnancy Childbirth*. 2009 Mar 16. 9:11.
15. G.G Dudell and L.jain "Hypoxic respiratory failure in the late preterm infant' clinics in perinatology, vol 33 no 4 , pg 803-830.
16. G.G Dudell "Respiratory transition in infants delivered by cesarean section" vol 30 , no 5 .pg 296-304
17. M.L. Wang "clinical outcomes of near term infants" vol 114 , pg 372-376
18. W.A Engle, C.Wallman et all "optimizing care and outcome of preterm infants ", vol 120 , no 6 pp 1390-1401 , 200