

Etiological factors and clinical courses of birth asphyxia

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Abstract

Introduction: perinatal asphyxia, neonatal asphyxia partum factor or birth asphyxia is a medical condition resulting from deprivation of oxygen to a newborn infant that lasts long enough during the process to cause physical harm, PROM, Cord accidents usually to the brain. And it is almost all neonatal deaths occur in our rural and urban area, where the majority is delivered at homes with negligible antenatal care and poor prenatal services. **Methods:** In this collaborative study conducted prospective, descriptive study. As a case of 150 newborn babies and as a control 1190 newborn babies are fulfilled the selection criteria for prenatal and birth asphyxia. **Results:** Incidence of birth asphyxia in relation to ante partum and intra partum factors. And shows that mother with complication like eclampsia, APH, PROM, cord accidents, failed progress of labor, obstructive labor and prolong 2nd stage of labor, etc were more likely to deliver asphyxiated baby, and analysis of maternal risk factors for birth asphyxia. Many pathological, biochemical and metabolic changes occurs as a result of birth asphyxia. And the data were analyzed by slandered statistical test, namely, Z test, Chi square test, and univariate and ultivariate logistic regression analysis of risk factor. **Conclusion:** In our study it was observed that, Pregnancy related complication in rural and urban population of Kishanganj district was mostly Eclampsia, pre-eclamptic toxemia, Oligohydramnios, PROM(M24hr) etc. To prevent birth asphyxia trained personal and neonatal resuscitation equipment should be mandatory in all maternity home/hospital because prevention is the best and be only option to reduce the Pre natal and birth asphyxia.

Key Word: Perinatal asphyxia, Neonatal asphyxia,, Eclampsia, Pre-eclamptic, toxemia, Oligohydramnios, PROM, Cord accidents

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Received Date: 06/08/2015 Revised Date: 12/09/2015 Accepted Date: 01/10/2015

| Access this article online | |
|---|--|
| Quick Response Code: | Website: www.statperson.com |
|  | Volume 5 Issue 4 |

INTRODUCTION

Asphyxia is a medical condition in which placental or pulmonary gas exchange is impaired or they cease altogether typically producing a combination of progressive hypoxemia and hypercapnea.¹³. Seven million prenatal deaths occur each year, mostly in developing countries. Nearly 4 million newborn suffer moderate to

serve birth asphyxia, with at least 8,00,000 dying and at least an equal number developing sequelae such as epilepsy, mental retardation, cerebral palsy and learning disabilities³. Birth asphyxia is one of the major cause of early neonatal mortality in India. Among the institutional births, incidence is 5 % and accounts for 24.3 % of neonatal deaths.¹⁰ Cerebral palsy is the most important long –term outcome of birth asphyxia and may be accompanied by mental retardation, seizure disorder, or other associated neurological or visual, auditory disabilities.¹² The greatest risk of adverse outcome is seen in newborn infants with fetal acidosis(pH <7), a 5 minute apgar score of 0 – 3, hypoxic – ischemic encephalopathy or other multi organ malfunctions.¹⁴

METHODS

The study approved the ethical committee was conducted in the neonatology unit, Department of pediatrics from Aug 2014 to July 2015.

Source of data: 150 new born babies including those born in MGM Medical College and LSK hospital, Kishanganj and out born babies referred within one hour after delivery to the MGM Medical College. Who fulfilled the selection criteria for perinatal asphyxia formed the study group.

Study Design: A prospective, descriptive clinical study.

Inclusion Criteria: All babies with birth asphyxia in Neonatology Unit, Department of paediatrics at MGM Medical College and L.S.K. Hospital, Kishanganj.

Exclusion Criteria: Congenital dysmorphic syndromes, Congenital neuromuscular disease, CNS, cardiac pulmonary congenital malformations, Discharged against medical advice/ not available for follow up.

The term infants were indentified of having had perinatal asphyxia when at least three of the following criteria : - (i) pH ≤ 7.2 determined by blood gas analysis with first hour of the birth.(ii) Apgar score : < 4 at one minute and /Or <7 at five minutes. (iii) Positive pressure ventilation before sustained respiration occurred. The involvement of other organ system was also noted on the basis of the clinical/laboratory criteria. Such as – Renal, Pulmonary, cardiovascular, gastrointestinal. Neonates were followed up for 12 weeks and the outcome in the from of persisting neurological abnormality and /or mortality, if any were noted.

A detailed progress chart was maintained daily. Investigations like Blood sugar, Blood Urea, Serum Creatinine, Electrolytes, Serum bilirubin, hemogram, CSF examination, Chest X-ray, Cranial ultrasonography, Cranial CT scan, ECG, etc performed if indicated.

Statistical Methods: The data obtained was analyzed by using following statistical methods.

Chi squire test and 2x2, 2x3, 3x3 Fisher Exact test has been used to find the gignificant association of HIE staging and outcome and other study Characteristics.

RESULT

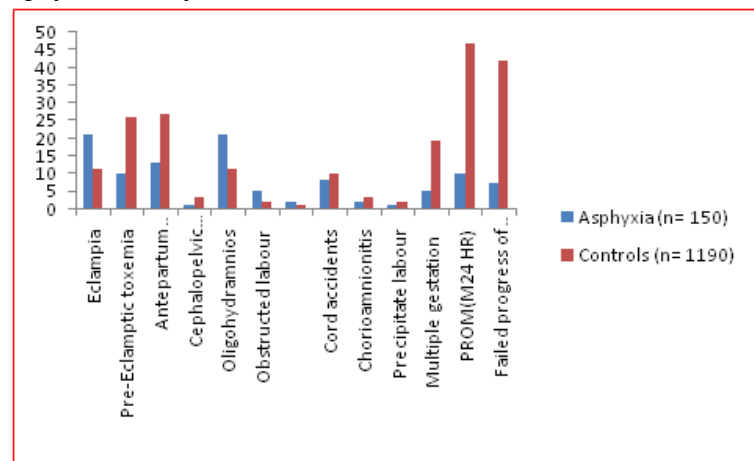
Incidence of birth asphyxia in relation to antepartum and Intrapartum factor

| Risk Factor | Asphyxia (n= 150) | | Controls (n= 1190) | |
|------------------------------|-------------------|------|--------------------|------|
| | N | % | N | % |
| A. Antepartum Factors | | | | |
| Eclampsia | 21 | 14 | 11 | 0.92 |
| Pre-eclamptic Toxemia | 10 | 6.66 | 26 | 2.18 |
| Antepartum hemorrhage | 13 | 8.66 | 27 | 2.26 |
| Cephalopelvic disproportion | 1 | 0.66 | 3 | 0.25 |
| Oligohydramnios | 21 | 14 | 11 | 0.92 |

Table 2

| Risk Factor | Asphyxia (n= 150) | | Controls (n= 1190) | |
|-------------------------------|-------------------|------|--------------------|------|
| | N | % | N | % |
| B. Intrapartum Factors | | | | |
| Obstructed labour | 5 | 3.33 | 2 | 0.16 |
| Prolong II stage of labour | 2 | 1.33 | 1 | 0.08 |
| Cord accidents | 8 | 5.33 | 10 | 0.84 |
| Chorioamnionitis | 2 | 1.33 | 3 | 0.25 |
| Precipitate labour | 1 | 0.66 | 2 | 0.16 |
| Multiple gestation | 5 | 3.33 | 19 | 1.59 |
| PROM(M 24 hr) | 10 | 6.66 | 47 | 3.94 |
| Failed progress of labour | 7 | 4.66 | 42 | 3.52 |

Table No 1 and 2 shows that mother with complication like Eclampsia, APH, PROM, Cord accidents, failed progress of labour, obstructed labour and prolonged 2nd stage of labour, etc were more likely to deliver asphyxiated baby.



CONCLUSION

To identify material and fetal risk factors, methods of resuscitation and clinical courses of birth asphyxia. Of total life birth 1340 newborn,150 newborns had birth asphyxia and 1190 newborns saved control. In this study, Pregnancy related complications such as eclampsia, Pre-eclamptic toxemia and oligohydramnios, prolonged second stage of labor, cord accidents, antepartum hemorrhage, choriamnionitis, significantly increased. In this study, outcome of HIE closely related to severity of HIE. Stage –I HIE is significantly associated with normal out come and stage III HIE is significantly associated with death. Most of the newborns with stage II HIE have normal outcome, a small proportion of them have sequelac or mortality.

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Source of Support: None Declared
Conflict of Interest: None Declared