RISK FACTORS AND DEVELOPMENTAL OUTCOME AMONG BABIES WITH PERINATAL ASPHYXIA IN A TERTIARY CARE CENTRE

Sudhakar Reddy¹, Natarajan Pachiappan², Bahubali Gane³, Revathy⁴

¹Senior Resident, Department of Paediatrics, Sri Venkateshwara Medical College and Research Centre, Ariyur, Pondicherry.

²Associate Professor, Department of Paediatrics, Sri Venkateshwara Medical College and Research Centre, Ariyur, Pondicherry.

³Assistant Professor, Department of Paediatrics, Sri Venkateshwara Medical College and Research Centre, Ariyur, Pondicherry.

⁴Junior Resident, Department of Paediatrics, Sri Venkateshwara Medical College and Research Centre, Ariyur, Pondicherry.

ABSTRACT

BACKGROUND

Birth asphyxia is commonest cause of preventable cerebral injury. It is also important cause of neonatal mortality. Incidence of birth asphyxia however is higher in developing countries and leading cause of neonatal mortality. This work is undertaken to study the incidence, risk factors and outcome of birth asphyxia.

METHODOLOGY

This study was conducted in the neonatal intensive care Unit of tertiary care hospital. Neonates with the APGAR score of less than 7 at 5 minutes were included in the study. Asphyxiated newborns who satisfied the inclusion criteria were enrolled in the study. A detailed prenatal, natal and postnatal history was obtained. A general physical examination was conducted which included temperature, heart rate, any apparent physical abnormality, weight, length and head circumference.

OBSERVATIONS

Total 684 cases admitted out of which 188 case were expired, 82 case left against medical advice, 414 (60%) cases were improved. Out of 414 cases 156 lost to follow up. 258 cases followed up to one year of age. In the present study, a higher incidence of mortality was seen in babies delivered by instrumental deliveries 51.4% (88 cases). Mortality in babies delivered by Emergency LSCS was 23.1% (52 Cases), while in normal vaginal delivery the incidence of mortality was 16.6% (48 cases).

CONCLUSION

The common predisposing factors of birth asphyxia were poor antenatal care (24%) and meconium stained liquor (20%). Both ante partum and intra partum factor are important in the causation of birth asphyxia. Improvement in public health of women with associated gains in female growth must remain a long term goal.

KEYWORDS

Perinatal Asphyxia, Risk Factors, Development.

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INTRODUCTION

Birth asphyxia is defined as the failure of a newborn to establish spontaneous respiration immediately following complete delivery.¹ Birth asphyxia is the most common and important cause of preventable cerebral injury.² Birth asphyxia is a important cause of neonatal mortality. Every year approximately 4 million babies are born asphyxiated. Incidence of birth asphyxia however is much higher in developing countries. It continues to be a major cause of neonatal mortality in developing countries.^{3,4} Maternal infections, prematurity and multiple births are important risk factors for birth asphyxia.⁵ So this work was undertaken to study the risk factors and outcome of birth asphyxia.

METHODOLOGY

This study was conducted in the neonatal intensive care Unit of tertiary care hospital, Puducherry. We included the neonates with the APGAR score of less than 7 at 5 minutes. Excluded the babies with major congenital malformation. Asphyxiated newborns satisfying the inclusion criteria were enrolled in the study, the findings were recorded on a standard Performa. A specially designed questionnaire was administered to assess the role of maternal and neonatal factors in asphyxia. A detailed history of the presenting complaints and the prenatal, natal and postnatal history was obtained. Mode of delivery was noted. A general physical examination was conducted which included temperature, heart rate, any apparent physical At each visit, detailed neurological examination was done and development assessment was done using Trivandrum Development Screening Test. weight, length and head circumference were noted. Babies were followed up to one year of age.

OBSERVATIONS

There were 11075 babies delivered during the march 2010 to march 2011, out of which 684 had perinatal asphyxia.

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Corresponding Author:

Dr. Natarajan Pachiappan,

Associate Professor,

Department of Paediatrics,

Sri Venkateshwara Medical College and Research Centre,

Ariyur, Pondicherry.

E-mail: bahubaligane@gmail.com

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All babies with perinatal asphyxia were examined and the data recorded. Distribution of babies according to gender is given in Fig. 1.

Fig. 1: Distribution of Cases According to Gender

Newborns with birth weight 2500–4000gm accounted for 81.2% of infants, while less than 2500gm were 15.7% and those more the 4000gm were 2.9% (Table 1). Distribution according to maternal age is given in Fig. 2.

Birth Weight	No. of Cases	Percentage
1000 – 1499	49	7 %
1500 – 2499	59	8.6 %
2500 – 2999	262	38.3
3000 – 3499	218	31.8
3500 – 3999	76	11
➤ 4000	20	2.9

Table 1: Distribution of Cases According to Birth Weight

Fig. 2: Distribution according to maternal age

Predisposing Factors	No. of Cases	Percentage
ANC visit less than 3	59	23.9
Ante partum hemorrhage	5	2.03
Pregnancy induced hypertension	28	11.3
Age < 18 yrs	30	12.1
Age > 35 yrs	6	2.4
Maternal fever at the time of delivery	4	1.6
Premature rupture of membrane	14	5.6
Prolonged 2nd stage labour	32	13.1

Malpresentation	9	36
Meconium stained liquor	49	19.9
Prematurity	7	2.8
Multiple Births	3	1.2

Table 2: Predisposing Factors of Birth Asphyxia

The common predisposing factors of birth asphyxia were poor antenatal care (24%), meconium stained liquor (20%), prolonged labour (13%), maternal age <18yrs (12%), PIH (11%). More than one risk factor were present in 54% of cases (Table 2)

Organ System	No. of Cases	Percentage
Renal	287	42
Respiratory	259	38
CVS	198	29
GIT	109	16
Hematological	82	12

Table 3: Distribution of Organ System Involvement

Commonest organ involved was renal. 42% of the babies had renal involvement. Other organs involved were pulmonary 38%, CVS 29%, GIT 16% Haematological 12% (Table 3).

Total 684 cases admitted out of which 188 case were expired, 82 case left against medical advice, 414 (60%) cases were improved. Out of 414 cases 156 lost to follow up. 258 cases followed up to till one year of age. In the present study, a higher incidence of mortality was seen in babies delivered by abnormal vaginal labour 51.4% (88 cases). Mortality in babies delivered by Emergency LSCS was 23.1% (52 Cases), while in normal vaginal delivery the incidence of mortality was 16.6% (48 cases).

Motor development delay	40
Mental Development Delay	32
Seizures	18
Hearing & Speech problems	12
Ocular problems	28
Microcephaly	8
Hydrocephalus	2
Recurrent infection	19
Aspiration Pneumonia	20
Feeding Difficulties	32

Table 4: Outcome at one year of Age

Total 258 cases were followed up to age of one year, 72 cases had abnormal development 40 cases had abnormal motor development while 32 cases were delay in mental development. Associated problems like seizures in 18 cases, ocular problems like refractory errors, Strabismus in 28 cases, defect in hearing and speech in 12 cases, slow head growth in 8 cases, hydrocephalus in 2 cases, feeding difficulties in 32 cases. Recurrent infections and aspiration pneumonias were noticed in 19 and 20 cases respectively (Table 4).

In present study a higher incidence of mortality was seen in birth weight between 1.5–2.5kg babies (42%). The incidence of mortality babies weighing between 2.5 – 4Kg was 21%, while in babies weighing more than 4 kg had mortality of 15 %.

DISCUSSION

According to WHO Birth Asphyxia is leading cause of neonatal mortality in developing Countries. Perinatal asphyxia accounts for 20 percent of infant mortality rate.

In present study, the magnitude of problems of birth asphyxia was considerably high. The incidence of birth asphyxia was 6.1% 684 had birth asphyxia in 11, 075 deliveries. Similar results were noted in some of the prior studies.⁶⁻⁸ Studies from developed Countries showed lower incidence.⁹⁻¹³ The high incidence of birth asphyxia in present study was attributed to the fact that Govt.

Being a tertiary care hospital, most of referral are from nearby primary centers and remote places, which may lead to delay in reaching hospital, which is one of the cause for higher incidence of asphyxia in this study. Out of 684 babies, 188 died due to severe CNS involvement and multi-organ failure. 124 babies had abnormal neurological examination at the term discharge. Of the 72 Cases with abnormal development, 40 cases had motor delay in motor development 32 are delayed in social language developments. Seizures in 18 cases, ocular problems like squint, refractory errors in 28 cases. Abnormal outcome was observed in majority of babies who had no antenatal check-ups. Abnormal outcome was observed in majority of babies who had no antenatal check-ups. Unfavourable outcome noticed in majority of infants delivered at preterm gestation, which was statistically significant.

Breech presentation, forceps delivery and induced labour were apparently associated with higher incidence of developmental delay, the difference is statistically significant. The development delay was observed more in babies belonging to low socio economic status compared to middle and high economic status, which is statistically significant

CONCLUSION

The common predisposing factors of birth asphyxia were poor antenatal care (24%), meconium stained liquor (20%), prolonged labour (13%), maternal age <18yrs (12%), PIH (11%). More than one risk factor was present in 54% of cases. Higher incidence of mortality was observed in low birth weight babies (42%) and preterm babies (41%). Both ante partum and intra partum factor are important in the causation of birth asphyxia. Improvement in public health of women with

associated gains in female growth must remain a long term goal.

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