Original Article

Mortality Among Neonates Having Birth Asphyxia at Neonatal Intensive Care Unit P.M.C.H.

1. Ali Akbar Siyal 2. Babar Dahri 3. Juveriya Naquvi 4. Abdul Hameed

1. Prof. of Paeds Medicine 2, 3 & 4. Trainee RMOs, Dept. of Paeds Medicine,
Peoples University of Medical & Health Sciences Nawabshah

ABSTRACT

Objective of study: To see the outcome of birth asphyxia in tertiary care hospital Nawabshah.
Study design: Retrospective descriptive study.
Place and Duration of Study: The study was conducted at neonatal intensive care unit (N.I.C.U) Paediatric ward of People's medical college and hospital Nawabshah from 1st January 2010 to 31st December 2010.
Patients and Methods: Record of patients who were admitted in N.IC.U was used for data collection. Data regarding sex, gestational age (term and preterm), and outcome (discharge, expired) was collected.
Results: During study period 1657 neonates were admitted, of these 1371. Were term infants 286 were preterm infants, there were 1144 males, and 513 Females. Out of 1657, 466 (22%) patients expired, out of these 466 expired patients, 391(83.9%) were term babies and 75 (16.09%) were preterm.
Conclusion: All the patients admitted in our NICU, birth asphyxia was the leading cause of Neonatal admission and mortality. And birth asphyxia stage 3 HIE had the highest mortality.
Key Words: Mortality, neonates, Birth asphyxia, NICU.

INTRODUCTION

There is no universally accepted clinical definition of Asphyxia. Birth asphyxia is a widely used term for clinical diagnosis, but there is a little consensus as to what is meant by it[1]. Each year approximately 4 million babies are born asphyxiated, which results in 1 million deaths and an equal number of serious neurological sequelae, such as cerebral palsy, mental retardation, and epilepsy[2]. It is estimated that around 23% of all newborn deaths are caused by birth asphyxia, with a large proportion of stillbirths[3]. There are many reasons a baby may not be able to take in enough oxygen before, during, or just after birth. A mother may have medical conditions that can lower her oxygen levels; there may be a problem with the placenta that prevents enough oxygen from circulation to the fetus; or the baby may be unable to breath after delivery[4]. Historically, asphyxia was categorized into two grades of severity, Asphyxia Pallida and Livida, indicating varying degrees of affliction. Infants with asphyxia Pallida or pale asphyxia were generally regarded as more severely afflicted, requiring immediate resuscitation[5]. According to the World Health Organization (WHO), between four and nine million newborns develop birth asphyxia each year. Of those, an estimated 1.2 million die and at least the same number develop severe consequences, such as epilepsy, cerebral palsy, and developmental delay[6]. Therefore this is very critical period to reduce the under five mortality and to reach the millennium development goal 4 (MDG4). In our country where most of the newborns are born outside the hospital setting, and even in hospitals there is no proper data collection and registration facility available, it is very difficult to accurately assess the real burden of mortality and morbidity during perinatal period. Epidemiological research is needed to accurately estimate the contribution of birth asphyxia to perinatal morbidity and mortality, especially in community settings where the burden of disease, due to high proportion of unattended deliveries, is likely to be larger than in the hospital setting [7].

This study was conducted to look at the mortality among newborns clinically diagnosed as having birth asphyxia reaching a tertiary care setting.

PATIENTS AND METHODS

A retrospective study was conducted from the records of patients admitted from January 2010 to December 2010 at NICU Paediatric ward PMCH, the data included was sex, gestational age (term and preterm), outcome (expired, discharged). The patients who left against medical advice (LAMA) were not included. Data was analyzed using SPSS v.15.

RESULT

During our study period , total 2584 neonates were admitted, 1657 patients were admitted due to birth asphyxia, of these 1371 (83%) were term infants and 286 (17%) were preterm infants (fig.1). Out of these 1144 (69%) were males and 513 (31%) (Fig 2). In term infants 571 (41.65%) patients were in stage 1 HIE, 365

(26.62%) were in stage 2 HIE and 435 (31.73%) were in stage 3 HIE. (Table 1 fig 3). While 17 (1.24%) patients were expired in stage 1, 84 (6.12%) patients expired in stage 2 and 290 (21.15%) expired in stage 3 HIE. In preterm infants total admission was 472, 286 (17%) preterm were admitted with birth asphyxia, out of these 211 (73.78%) were discharged and 75 (26.22%) expired (table 2 fig 4). So, the total admission due to birth asphyxia during study period was 1657, out of which 466 (22%) patients expired (fig.5) out of these expired patients 391(83.9%) were term babies and 75 (16.09%) were preterm.

Figure No.1

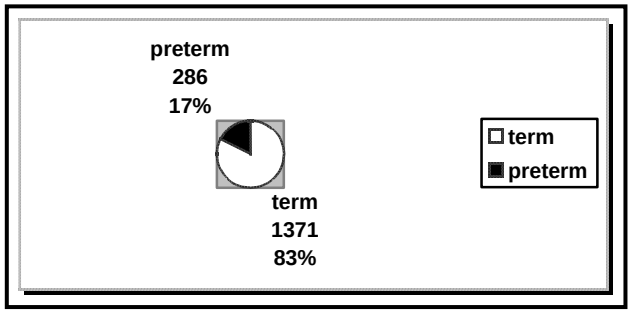


Figure No.2

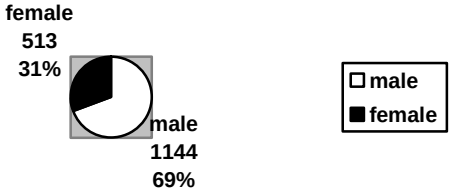


Figure No.3

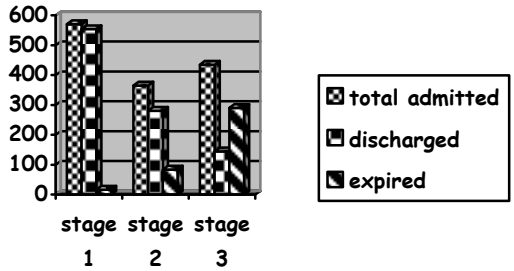


Figure No.4

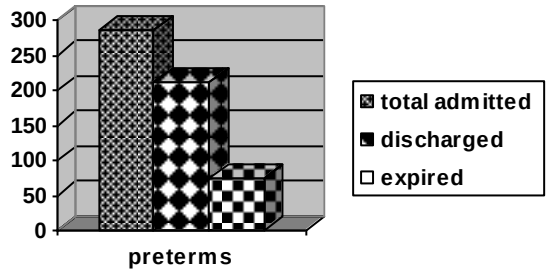


Table No. 01: Birth asphysic in term newborns

	Stage 1	Stage 2	Stage 3
Total admitted	**571 (41.65%**	**365 (26.62%)**	**435 (31.73%)**
Discharged	**554 (40.41%**	**281 (20.50%)**	**290 (21.15%)**
Expired	**17 (1.24%)**	**84 (6.12%)**	**290 (21.15%)**

Table No. 02: Birth asphyxia in preterm

Total admitted	286	%ages
discharged	211	73.78%
expired	75	26.22%

Figure No.5

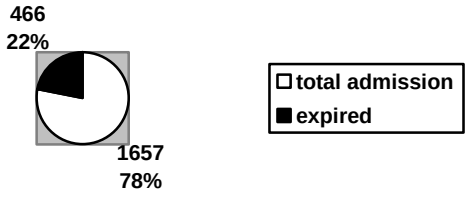
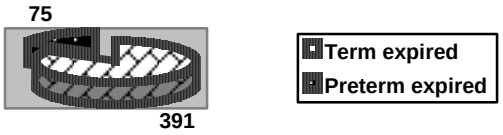


Figure No.6



DISCUSSION

Birth asphyxia is one of the most important causes of neonatal brain injury whose incidence ranges from 3.7 to 9 per thousand deliveries in the west [8]. Majority agree that birth asphyxia is the failure on the part of newborn to breathe spontaneously within one minute after birth [9]. In countries like Pakistan it is even higher because of negligible antenatal care and poor perinatal services. Another main problem is Data from hospitals in Pakistan and NICUs of low resource setting is very limited, and published data is very scanty. Almost 80% of the deliveries take place at home in our community where skilled and trained personnel as well as pediatric supervision are lacking[10].

In our study, 1657 patients with birth asphyxia were admitted during the study period. In our neonatal unit birth asphyxia accounts for the majority of admissions while in study from university of Zambia showed about quarter of neonatal survivors were suffering from Birth Asphyxia [11]. While a study from dhulikhel hospital Katmandu showed Birth asphyxia was one of the commonest causes of admission and mortality in NICU. Babies with HIE Stage III had a very poor prognosis [12] results were similar to our study. Preterm is defined as gestational age less than 37 weeks of gestation measured from the first day of the last normal menstrual period, in our study we admitted 286 (17%) preterm newborns with birth asphyxia, national data on preterm birth asphyxia was not available to match our results with, while a study from Alexandria (Egypt) showed that there was premature admission and death rate were high [13], The percentage of preterm in six countries namely Cuba, Hungary, New Zealand, Sweden, Australia and Japan rated 10.5%, 19.5%, 4%, 4.5%, 10.5% and 2.5% respectively. In the United States, preterm among blacks and whites were 17.8% and 8% respectively [14]. In our study there is a male predominance 1144 (69%), this male predominance is also reported in other studies, and this may be because of preference of parents for the male child.

In our study highest %age of expired patients belonged to stage 3 HIE (21.15%) Study from Tanzania 92.3% of neonates with Mild HIE discharged within seven (7) days while more than half those with severe HIE (51.3%) died and 72% of deaths occurred within first three (3) days of life [15]. similar results were shown in a large community based prospective study in Lahore that nearly 50% of all neonatal deaths in the first week were due to birth asphyxia[16.] However the HIE classification is not mentioned in that study.

CONCLUSION

From our study it is concluded that:

- Birth Asphyxia is still the major cause of hospital admissions in neonates, despite widespread availability of trained staff.

Infants having birth Asphyxia stage 3 HIE have the highest mortality.

RECOMMENDATION

Our recommendations based on our study are:

- All mothers should be offered a proper antenatal care.
- High risk pregnancies should be referred early to centers where NICU facilities are available.

Birth attendants and obstetricians should be trained in early recognition of the newborns that need resuscitation.

REFERENCES

1. Malcolm I. Levene, Frank A. Chervenak Fetal and Neonatal Neurology and Neurosurgery. Page no. 543.
2. Leviton A, Nelson KB. Problems with definitions and classifications of newborn encephalopathy. Pediatr Neurol 1992; 8(2): 85-90.
3. Rehana Majeed, Yasmeen Memon, Farrukh Majeed, Naheed Parveen Shaikh, Uzma DM Rajar, risk factors of birth asphyxia. J Ayub Med Coll Abottabad 2007;19(3):67-71
4. Haider BA, Bhutta ZA. Birth Asphyxia in Developing Countries: Current Status and Public Health Implications. Curr Probl Pediatr Adolesc Health Care 2006; 178-88
5. Saving Newborn Lives. The state of the world's newborn: a report from saving newborn lives. Washington DC, Save the children: 2001; 1-44.
6. Lawn J, Shibuya K, Stein C. No cry at birth: global estimates of intrapartum stillbirths and intrapartum-related neonatal deaths. Bull World Health Organ 2005;83:409-17.
7. Moss W, Darmstadt GL, Marsh DR, Black RE, Santosham M. Research priorities for the reduction of perinatal andneonatal morbidity and mortality in developing country communities. J Perinatol 2002;22(6):484-95.
8. N. McIntosh. Hypoxic ischemic encephalopathy HIE. In: Forfar, Arneils, editors. Text book of paediatrics. New York: Churchill Living Stone; 1998. p.126.
9. Neonatology Birth asphyxia. In: Text book of paediatrics. Pak Paediatr Assoc; 2000, p. 186.
10. Chishty AL, Iqbal MA, Anjum A, Maqbool S. Spec-trum of multi organ systemic involvement in birth as-phyxia. Pak Pediatr J 2001; 25: 81-7.
11. Halloran DR, McClure E, Chakraborty H, Chomba E, Wright LL, Carlo WA. Birth asphyxia survivors in a developing country. J Perinatol 2009; 29(3):243-9.
12. S Dongol, J Singh, S Shrestha. A Shakya Clinical Profile of Birth Asphyxia in Dhulikhel Hospital: A Retrospective Study. J Nep Paedtr Soc 2010; 30(3):141- 6.
13. Fakher M, Shaaban W, Monein AA, Hassan Z, Fikry MM. Statistical Study of Preterm Infants Admitted to NICU in Fawzy Moaz Hospital for Children. Alexandria J of Paeds 2005; 19(1):155-8
14. Puffer RR, Serrano CV. Patterns of birth weights. Pan American Health organization. WHO. Scientific publication No. 504. Washington DC: 1987.
15. Juma A. Prevalence and immediate outcomes of hypoxic ischaemic encephalopathy (HIE) among infants with birth asphyxia admitted at the neonatal

ward of Muhimbili National Hospital in Dar es salaam, Tanzania MD4 2006/07.
16. Jalil F, Lindblad RS, Hanson LA, et al. Early child health in Lahore, Pakistan. IX. Pcrinatal Events. Acta Paediatr Scand 1993; 390 (Suppl): 95-107.

Address for Corresponding Author:
Ali Akbar Siyal,
Prof. of Paeds Medicine,
Peoples University of Medical & Health Sciences
Nawabshah.