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Evaluation of Neonatal Morbidity and Mortality in Low Birth Weight Babies in a Tertiary Care Hospital

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ABSTRACT

In India, as many as 1.72million children die annually in the the neonatal period. The main reason for this is Low Birth Weight (LBW) which important factor affecting maternal and child health. Therefore this was conducted to assess the morbidity and mortality patterns of LBW neonates in a tertiary care hospital. Low birth weight neonates (n- 100) who admitted in NICU were selected for the study. Complete clinical examination and investigations were done and complications were observed and studied. Of the 100 babies, 19 died due to respiratory failure, Septicemia and other factors. Aspiration and HIE were found to be other significant causes of mortality. NEC was not a significant cause of mortality. Low birth weight babies of mother of booked case, female babies and birth weight ≥ 1500gms had better outcome in our study. It is important to monitor low birth weights babies and predisposing factors to decrease the neonatal morbidity and mortality.

Keywords: Low birth weight, Neonates, Mortality

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INTRODUCTION

One of the United Nations millennium development goals is the reduction by two-thirds of the mortality among children <5years of age by 2015. [1,2] The Resolution "A World Fit for Children" believed to be an important contribution towards Millennium Development Goal (MDG-4) of reducing child mortality by two thirds by 2015. [3] Worldwide, 98% of all neonatal deaths occur in developing countries and are largely due to infections (32%), birth asphyxia (29%), and consequences of prematurity and congenital anomalies (34%) [4]. India, the second most populous country of the world, LBW continues to remain one of the serious challenges to maternal and child health care with every 3rd born child being of a low birth weight. [5] In India, as many as 1.72million children die annually before reaching their first birthday and these, 72% die during their first month of life, the neonatal period. The neonatal mortality rate varies by state but, overall, it is reported to be 43per 1,000 live births [6]. To overcome the threats posed by Low Birth Weight (LBW), it is essential to conduct local surveillance in order to accurately assess the epidemiology of LBW and such areas where the likely prevalence of LBW is high, thus formulating effective interventions and monitoring the effectiveness of such interventions over a period of time. Prevention of neonatal mortality and reducing the morbidity in LBW babies requires the use of technologically advanced treatment methods associated with neonatal intensive care. The Government of India is implementing several intervention programs to improve pregnancy outcome in order to lower the existing high prevalence of LBW and consequent high IMR. It is important to monitor birth weights as well as assess the magnitude of neonatal morbidity and mortality and its subsequent causes and predisposing factors in order to prevent it. This study was conducted to assess the morbidity and mortality patterns of LBW neonates in a tertiary care hospital.

MATERIALS AND METHODS

A descriptive epidemiological study was conducted in Sri Siddartha Medical College Hospital, Agalakote, Tumkur, Karnataka. All new born babies (n-100) with low birth weight which were admitted in NICU were included in the study. Elaborate history was taken with the help of a pre-tested proforma which stressed on the presence of risk factors, that are associated with low birth weight was taken. This is followed by a complete clinical examination of every low birth weight baby and the clinical course in the hospital was followed closely with special lookout for complications. Follow up is attempted up to a month following delivery. Investigations like random blood sugar, serum electrolytes, serum bilirubin total and direct, septic screening , chest x-ray PA view, x-ray abdomen, cranial ultrasound, echocardiography were done, whenever indicated. Statistical analysis done by Student 't' test. Results on continuous measurements are presented on Mean ± SD. P value of <0.05 is taken as significant.

RESULTS

A total of 100 babies with low birth weight which were admitted in NICU were studied. Of the 100 babies, 57% were males and 43% were females. The sex ratio was 1000:755. The mean birth weight of the babies was 1615.98 ± 388.24 grams. Lowest birth weight was 760

gms. The mean age of mothers of the subjects of this study was 23.62 ± 4.15 years. The youngest mother was 19 years and the oldest 40 years old. 60% of the mothers are between 20 -24 years. 70% of the mothers were of low socioeconomic status. 58% of these cases were delivered by spontaneous vaginal delivery. LSCS was done in 41% cases and instrumental (forceps) delivery in 1% cases. 73% of the cases required no resuscitation. 27% of the cases needed resuscitation, of which, 7% improved with suctioning alone, while 8% required oxygen. Bag and mask ventilation was done in 8%, while endotracheal intubation was done in 4% of the cases. The morbidity pattern in combination in 100 preterm newborns is depicted in table. The morbidities occurred in combination in about 96% of the cases. 4% of the cases didn't have any morbidity.

FACTORS AFFECTING LOW BIRTH WEIGHT BABIES

Sl.no.	Neonatal morbidity	Frequency	%
1	Respiratory distress syndrome	21	21
2	Apnea	26	26
3	Septicemia	42	42
4	Hypoglycemia	9	9
5	Hypocalcaemia	2	2
6	Anemia	9	9
7	Pneumonia	4	4
8	Superficial infections	4	4
9	Necrotising enterocolitis(NEC)	8	8
10	Intra ventricular hemorrhage(IVH)	9	9
11	Patent ductus arteriosis(PDA)	4	4
12	Hypothermia	2	2
13	Feeding difficulty	67	67
14	Seizures	4	4
15	Bleeding episodes	12	12
16	Aspiration	6	6
17	Hyperbilirubinemia (Jaundice)	54	54
18	Birth Asphyxia (HIE)	27	27
19	Meningitis	2	2

MORTALITY PATTERN IN LOW BIRTH WEIGHT BABIES

Neonatal Disease	Survived		Deceased		p-value	Result
	Frequency	%	Frequency	%		
RDS+IVH	0	0	7	36.84	0.001	HS
Septicemia	23	23	3	15.78	0.04	S
NEC	3	3	2	10.53	0.05	NS
Aspiration	0	0	2	10.53	0.01	S
HIE	19	19	5	26.32	0.02	S

HS: Highly significant; S: Significant

Of the 100 babies, 22 babies left the hospital against advice/ on request. 59 babies survived and were discharged. 19 died due to various causes. Out of 19 deaths, 7 (36.84%) were due to respiratory failure as a result of RDS with IVH, 3 (15.78%) were due to peripheral

circulatory failure as a result of Septicemia, 2 (10.53%) were due to circulatory failure as a result of NEC, 5 (26.32%) were due to respiratory failure as a result of HIE, and 2 (10.53%) was due to respiratory failure as a result of aspiration. Out of these, RDS with IVH was found to be highly significant. Septicemia, Aspiration and HIE were found to be other significant causes of mortality. NEC was not a significant cause of mortality.

Low birth weight babies of mother being a booked case had a better outcome than unbooked case in this study. Female babies had a better outcome when compared to male babies in this study. In babies with a birth weight ≥ 1500gms, there is better survival. There was better survival of babies whose mothers were given antenatal steroids.

DISCUSSION

The first 4 weeks of life, the neonatal period carries one of the highest risks of death of any 4-week period in the human lifespan [7]. Although we witnessed a global decline in terms of under five and infant mortality rates in the recent decades, neonatal mortality still continues to be high [8]. Neonatal deaths generally result from complication of preterm birth, birth asphyxia or trauma during birth, infection, severe malnutrition or other specifically perspective perinatal causes [9]. In our study we had mortality of 11.5% in female babies and 30.6% in male babies. According to Stevenson et al [10] the mortality was 15% in females and 22% in males. Study of Singh M et al [11] has shown improved survival with increase in both the birth weight and gestational age. Our study results were in accordance with Singh et al [11] showing 100% mortality in babies with a birth weight of 500-999gms. The need for resuscitation was found to be associated with poor survival. Narayan S et al [12] in their study observed hyperbilirubinemia was most common reason infant morbidity, which was similar to our study showing . 65% sases having hyperbilirubinemia.

All morbidities in the present study had lesser incidence than in Narayan S et al [12] l study but higher incidence than the Suhas VP et al [13] study. The influence of RDS with IVH, birth asphyxia with HIE, septicemia and aspiration were found to affect survival and were significant causes of mortality in the present study. According to Narayan S. et al [12] and Suhas VP et al [13] septicemia is the commonest cause and accounted for 54% and 25.9% of neonatal deaths. It is an important preventable cause of mortality in preterm babies. [14] In our study, septicemia accounted for 15.78% of deaths.

In Narayan S et al [12] study, RDS with IVH accounted for 34% mortality compared to 36.84 % in the present study which was comparable. According to Suhas VP et al [13] RDS accounted for 14.9%. NEC accounted for 13% mortality in and compared well with the present study in which NEC acounted for 10.53% mortality. To conclude is important to monitor low birth weights babies and predisposing factors to decrease the neonatal morbidity and mortality.

REFERENCES

[1] UN general assembly 5s roadmap towards the implantation of United Nations Millennium declaration: Report of the Secretary General. UN document no. 756/326. New York: United Nations; 2001.

[2] ICMR Young Infant Study Group. Age profile of neonatal deaths. Indian Pediatr 2008; 45:991-4.

[3] World Health Organization: The world health report 2005. Make every mother and child count. The greatest risks to life are in its beginning. Geneva: WHO; 2005:79-81.

[4] Moss W, Darmstadt GL, Marsh DR, Black RE, Santosham M. J Perinatol 2002; 22:484–95.

[5] UNDP: Infants with low birth weight. [Internet]. 2011 [cited 2011 Aug 30]. Available from http://hdrstats.undp.org/indicators/67.html

[6] Ramji S. Indian Pediatr 2001; 38:263-6.

[7] Lawn JE, Cousens S, Zupan J. Lancet 2005; 365:891–900.

[8] Black RE, Kelley L. Child Health Research Project Special Report 1999:1–48.

[9] Zupan J. N Engl J Med 2005; 352:2047–48.

[10] Stevenson DK et al. Archives of Diseases in Childhood Fetal Neonatal Edition 2000; 83: F182-F185.

[11] Singh M et al. Indian J Pediatrics 1982; 49: 511-517.

[12] Narayan S. et al. Indian Pediatr 2002; 40: 130-134.

[13] Suhas V. Pattern of neonatal mortality and morbidity low birth weight neonates: a study from a tertiary care hospital in rural India. 2011;1(4).