

Mortality and Morbidity Pattern of Neonatal ICU of Gauhati Medical College and Hospital.

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Abstract:

Introduction: Knowledge about spectrum of neonatal diseases and their mortality helps in proper management of common neonatal problem which will lead to better outcome and improved quality of life among survivors.

Method: A hospital based prospective study was conducted after approval from the hospital ethical committee during the period of October 2014 to September 2015.

Result: Total number of NICU admission during Oct 2014 to Sept 2015 was 5590.

The major cause of morbidity were as Hypoxic Ischemic Encephalopathy(HIE)(30%), Jaundice requiring phototherapy (26.6%), others (18.3%){other include all low birth weight baby less than 1.8kg who require special care}and lastly sepsis (12%).

The overall mortality rate was 770(13%). Out of those, outborn deaths were 58% and inborn were 41% which indicates the poor condition at the time of referral of the outborn neonates. The major cause of mortality were HIE(57%), Prematurity with RDS (19.8%), Sepsis (15.7%).

This study further elaborates that the HIE constitute the major cause of admissions and mortality in our NICU.

Conclusion: This study identifies HIE being the most important cause of mortality and morbidity. Improving the antenatal care, maternal health and timely intervention by referral to tertiary centres will help neonatal outcome.

Keywords: Neonatal mortality profile, Neonatal morbidity profile, Hypoxic Ischemic Encephalopathy.

I. Introduction

To achieve millennium development goal specific focus on neonatal mortality and morbidity is required. According to the National Family Survey-3(NFHS-3) report, current neonatal mortality rate is 33 per 1000 live births^[1]. Neonatal mortality rate of Assam is 33 per 1000 live births^[1] same as Indian neonatal mortality rate.

In a report published in The Lancet, the major direct cause of the deaths were preterm(27%), infections (26%), asphyxia (23%), congenital anomaly (7%), others (7%), tetanus(7%) and diarrhoea(3%)^[2]. There is scanty data available regarding morbidity and mortality of north east India.

So the knowledge about spectrum of neonatal diseases and proper management of common neonatal problem will lead to better outcome and improved quality of life among survivors.

Problems we face are with the improvement of transport facility (like 108,102) a large number of cases have been referred from peripheral care to SCNU's and NICU's. So there is increasing load of cases in SCNU and NICU specifically in tertiary care facility like Medical colleges. Where in spite of giving quality care we are providing quantity care as well, but insufficient health care providers in medical colleges are hindering our work for better outcome.

Now it is very important to study the mortality and morbidity pattern of tertiary care centre as it helps in implementation of new technique and new health facilities for better outcome and improved quality of life among survivors.

II. Aim and objective

To study the morbidity and mortality in neonates in tertiary care neonatal unit in North East India.

III. Material and Method

A hospital based prospective study was conducted during the period of October 2014 to September 2015. All neonates both inborn and outborn were included in the study. Data were prospectively recorded on pre-tested proforma developed by UNICEF.

3.1 Inclusion Criteria: All neonates who were admitted in Neonatal ICU.

3.2 Exclusion Criteria: Neonates who left hospital against medical advice.

IV. Result

Total number of NICU admission during Oct 2014 to Sept2015 was 5590. Of which 2277(40.7%) were outborn and 3313(59.3%) were inborn as shown in **Table 1**. Male babies got admitted more than the female babies (Male: Female ratio was 1.4:1), as shown in **Table 2**.

Table 1: Mode of Admission

	Outborn	Inborn	Total
Admissions	2277	3313	5590
Percentage	40.7%	59.3%	100%

Table 2: According to Gender

	Male	Female	Total
Admissions	3352	2238	5590
Percentage	60%	40%	100%

Low birth babies were seen in 60% of the neonates admitted in NICU and the remaining had normal weight. Extreme low birth weight babies who got admitted in NICU were 84.

During the study period 3689(66%) term babies got admitted in NICU and 1901(44%) were pre-term.

The morbidity pattern i.e cause of hospital admission was HIE:1688(30%), Jaundice requiring phototherapy or exchange transfusion:1488(26.6%), sepsis:687(12%), RDS: 345(6.1%), MAS:189(3.3%), Congenital Anomaly:102(1.8%), Hypothermia: 1(0.02%), Hypoglycemia:65(1.1%), others:1025(18.3%), other include all low birth weight baby less than 1.8kg who require special care. Morbidity profile is shown in **Table 3**.

Table 3: Distribution of Neonate According to Birth Weight, Gestation Age, Morbidity Pattern of Admissions.

	Inborn number (%)3313	Outborn number (%) 2277	Total number (%)5590
Distribution according to birth weight			
>2.5kg	915(27.6%)	1321(58%)	2236(40%)
1.5-2.49kg	2156(65%)	751(33%)	2907(52%)
1-1.49kg	190(5.4%)	173(7.6%)	363(6.5%)
<1kg	52(2%)	32(1.4%)	84(1.5%)
According to Gestation age			
Term	2163(65.28%)	1526(67%)	3689(66%)
Preterm	1150(34.72%)	751(18%)	1901(44%)
Morbidity profile			
HIE	968(29.1%)	720(31.6%)	1688(30%)
Jaundice	1083(32.7%)	405(17.8%)	1488(26.6%)
Sepsis	267(8.6%)	420(18.44%)	687(12%)
RDS	206(5.92%)	139(6.10%)	345(6.1%)
MAS	145(4.3%)	44(2%)	189(3.3%)
Congenital anomalies	44(1.3)	58(2.5%)	102(1.8%)
Hypoglycaemia	6(0.18%)	59(2.6%)	65(1.1%)
Hypothermia	0(0%)	1(0.04%)	1(0.02%)
Others	594(17.9%)	431(18.92%)	1025(18.3%)

The overall mortality rate was 770(13%) Out of 770, outborn deaths were 450(58%) inborn were 320(41%).

The cause of mortality were HIE: 445 (57%), Prematurity with RDS: 153(19.8%), Sepsis: 121(15.7%), MAS: 22(2.8%), congenital anomaly: 29(3.7%). Of the total deaths 428 were either term or post term and 342 were preterm. Of the 770 deaths 193(25%) were low birth weight and 75 out of 84 extreme low birth weight expired. Mortality profile is shown in **Table 4**.

Table 4: Distribution of Neonate According to Death

	Inborn number (%)320	Outborn number (%) 450	Total number (%)770
Distribution according to birth weight			
>2.5kg	135(42.1%)	167(37.1%)	302(39.2%)
1.5-2.49kg	75(23.4%)	118(26.2%)	193(25%)
1-1.49kg	104(32.5%)	96(21.3%)	200(26%)
<1kg	32(10%)	43(9.4%)	75(9.8%)
According to Gestation age			
Term and post term	149(46.5%)	279(62%)	428(55.5%)
Preterm	171(53.4%)	171(38%)	342(45.5%)
Mortality profile			
HIE	131(40.9%)	314(69.7%)	445(57%)
Prematurity with RDS	82(25.6%)	71(15.7%)	153(19.8%)
Sepsis	85(26.5%)	36(8%)	121(15.7%)
MAS	13(4%)	9(2%)	22(2.8%)
Congenital anomalies	9(3%)	20(4.6%)	29(3.7%)

V. Discussion

In the total of 5590 admissions 3352 were male babies and 2238 were female babies this is similar to that seen in Manikantkumar et al^[3] and Nath Roy^[4] et al. this is due to the male preference in the society and the biological fragility of males to infections. In our study 52% had low birth weight and 44% were born prematurely (preterm) this is similar to the study conducted by Veena Prasad et.al^[5], Manikantkumar et al^[3] and other studies conducted in various developing countries with poor socioeconomic status. This is due to the poor pre pregnant health status of the mother, poor anti-natal health visits and poor socioeconomic status of the families, as our hospital caters to the poor and unemployed class of the society. This study is in accordance to the UNICEF “The state of the world children 2010” report, 28% neonates are born with low birth weight in India^[6].

The cause of hospital admission was HIE (30%), Jaundice requiring phototherapy or exchange transfusion (26.6%), sepsis (12%), RDS(6.1%), MAS (3.3%), congenital anomaly(1.8%), Hypothermia (.02%), Hypoglycaemia(1.1%), others (18.3%), other include all low birth weight baby less than 1.8kg who require special care. Further the study shows that the HIE the single most common cause of admissions for both inborn and outborn comprising 30% of total admissions, this is similar to the study conducted by Dawal salve e.t al^[7].

The mortality rate observed was 13% which is much less compared to Manikantkumar e.t al^[3] and Veena Prasad e.t al^[5]. The cause of mortality were HIE (57%), Prematurity with RDS (19.8%), Sepsis (15.7%), MAS (2.8%), congenital anomaly (3.7%). Mortality due to HIE was higher compared to Manikantkumar e.t al^[3] study which constituted 31.3%.and markedly high compared to Veena Prasad et.al^[5] which constituted 13.87%. This high number of deaths due to HIE was because of poor obstetric care at the peripheries leading to poor referral condition of both the mother and the neonate at birth.

Low birth weight mortality accounted to 60.8% of total deaths which is similar to the study conducted by Kumar et.al^[8]from India. Extreme low birth weight babies who got admitted in NICU were 84 of which 75 expired due to high susceptibility to infections and non-availability of surfactant or positive pressure ventilation.

VI. Conclusion

According to study Birth asphyxia(HIE), prematurity with RDS and sepsis was the leading cause of mortality. In spite of many advances in neonatal care birth asphyxia continues to be a leading cause of admissions in NICU. Majority of mortalities and morbidities can be prevented by improving antenatal care, maternal health, timely intervention and referral for high risk cases to tertiary care centres. As the study is a hospital based study most of the patients had a low social income status, so the results inferred from the study was not the true reflection of the burden of the community as a whole.

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