Original Research Article

A Study on Clinical Profile of Sick-Neonates Attending Sick New-Born Care Unit of a Tertiary Care Hospital of Odisha

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ABSTRACT

Introduction: Neonatal mortality is a major contributor towards infant mortality, accounting for two-thirds of deaths in children under the age of one year. The Millennium Development Goals of reducing under five and infant mortality rates cannot be realized unless neonatal mortality declines by about 50% of the current levels. Neonatal mortality is quite amenable to reduction, since evidence-based, affordable and effective interventions are available to improve neonatal health and reduce neonatal mortality.
Objectives: To study the clinical profile of cases admitted to Sick New-born Care Unit (SNCU). To observe the treatment offered and the outcome of sick neonates admitted to SNCU.
Material & Methodology: The clinical profile was collected by conducting examination of the case .The treatment offered as well as the lab investigations carried out was collected from the case registers. Likewise the outcomes were obtained by the subsequent follow up visits.
Results: Out of 2042 cases majority (71.2%) were term babies. 57.05% of the neonates were low birth weight (LBW). LBW more prevalent among males (62%). 68% were early and 32% were late neonates. Majority took admission due to hypoxic ischemic encephalopathy (34%), prematurity (8.84%) and infections. 16.5% were given phototherapy, 12.44% antibiotics, 29.09% oxygen and 8.62% exchange transfusion, 22.03% were on mixed treatment. 66.56% cured and discharged, 20.18% died, 11.6% left the hospital against medical advice [LAMA] and 2.10% were referred.
Key Words: Term, Preterm, Low birth weight, early and late neonate, HIE, Prematurity, Infection, Phototherapy, Antibiotics, Oxygen inhalation, Discharged, Death, LAMA.

INTRODUCTION

The Millennium Development Goals (2015) of reducing under five and infant mortality rates cannot be realized unless neonatal mortality declines by about 50% of the current levels. Worldwide, the most important single causes of neonatal deaths are preterm birth, birth asphyxia, sepsis and pneumonia. [1-3] The World health organization estimates that birth weight below 2500 g indirectly contributes to about 15% of the neonatal mortality, ranging from 6% in high income countries to 30% in low income countries, with preterm birth and related complications being the underlying cause. [4]

India carries the single largest share (around 25-30%) of neonatal deaths in the world. Neonatal deaths constitute two-thirds

of infant deaths in India; 45% of the deaths occur within the first two days of life. [5]

It has been estimated that about 70% of neonatal deaths could be prevented if proven interventions are implemented effectively with high coverage. [6] Facility-based newborn care, thus, has a significant potential for improving the survival of newborn in India.

Despite implication of various health related programs there is no significant decline in neonatal mortality rate and there is still non availability of actual information on morbidity and/or mortality of sick neonates. Thus the present study highlighted the magnitude of problem regarding neonatal health.

Objectives:
1. To study the clinical profile of cases admitted to Sick Neonatal Care Unit of pediatrics Dept. MKCG Medical College Hospital, Berhampur.
2. To observe the treatment offered to sick neonates in the study area.
3. To study the outcome of treatment in sick neonates admitted to this hospital.

MATERIALS & METHODS

Study Design: Hospital based observational Study

Study Duration: 2 years.

Study Area: SNCU of M.K.C.G. Medical College & Hospital.

Study population: Sick neonates admitted to SNCU from Jan2011 to June 2012 constituted the study population.

Methodology:

Inclusion criteria-

All the sick neonates who needed special care & got admitted to SNCU.

Exclusion criteria-

1.Neonates referred directly or from O&G & Pediatrics department with minor complains like feeding problem or routine checkups of premature &preterm babies.

2. Neonates whose mothers were non co-operative & did not give consent.

The information on the study subjects was obtained by making regular visits to the SNCU. The clinical profile was collected by conducting examination of the case .The treatment offered as well as the lab investigations carried out was collected from the case registers. Likewise the outcome the case was obtained by the subsequent follow up visits. All the information of each case was collected over a pre designed schedule. Before proceeding to detailed research work a pre-testing was conducted from October 2010 to December 2010. Collection of data regarding cases was started from January 2011 to June 2012. Analysis work done in the duration of July 2012 to October 2012.

Study Variables: Place of birth, Gestational age, Birth weight, sex, morbidity pattern, treatment and outcome.

Data Analysis: Use of Proportions, Percentages and Chi Square test of significance.

RESULTS

Table-1(a) revealed that among all the neonates admitted to the SNCU 56.9%were out-born and 43.1% were inborn.Table-1(b)shows 71.2% of the sick neonates were term, 24.17% were pre term and 4.63% were post term. Table-2 (a) Revealed that 42.95% neonates had normal birth weight and 38.09% had weight between 1500gm - 2499gm, 14.6% had weight 1000gm - 1499gm and only 4.36% had weight below 1000gm.Table-2 (b) shows 62% males had low birth weight whereas only 47.19% females had LBW. Table-3 revealed that out of all the sick neonates 68% were early and 32% were late neonates. Among early neonates' majority took admission due to hypoxic ischemic encephalopathy (34%) and prematurity (8.84%) where as in case of late neonates the main cause of admission was infections (12.67%) followed by hypoxic

ischemic encephalopathy (9%). Other causes were respiratory distress syndrome/other resp. disease (5.91%), meconium aspiration syndrome (6.75%), jaundice (6.3%), major congenital malformation (4.5%) and others (7.27%). Table-4 shows that 16.5% were given phototherapy, 12.44% antibiotics, 29.09% oxygen and 8.62% exchange transfusion, 22.03% were on mixed treatment of oxygen therapy, phototherapy, antibiotics and/or exchange transfusion and 11.32% provided with other treatments like incubation, proper breast feeding advice and kangaroo mother care. Table-5 revealed that most of the sick neonates were cured and discharged (66.56%), 20.18% died, 11.6% left the hospital against medical advice [LAMA] and 2.10% were referred to higher centres for specialized treatment.

Table-1(a) Place wise distribution of cases:

Place of birth	Number of Cases (n=2042)	Percentage (%)
In born	880	43.10%
Out born	1162	56.90%
Total	2042	100.00%

Table-1(b) Distribution of study population according to gestational age:

Gestational age	Number of Cases (n=2042)	Percentage (%)
Term	1454	71.20%
Pre term	493	24.17%
Post term	95	4.63%
Total	2042	100.00%

Table-2 (a): Birth weight among study population:

Birth Wt.	Number of Cases (n=2042)	Percentage (%)
>2500gm	877	42.95%
1500gm-2499gm	778	38.09%
1000gm-1499gm%	298	14.60%
<1000gm	89	04.36%
Total	2042	100.00%

Table- 2 (b) Sex wise distribution of Birth weight:

Sex	LBW		NBW		Total	
Male	847	62.00%	519	38.00%	1366	66.89%
Female	319	47.19%	357	52.81%	676	33.11%
Total	1166	57.09%	876	42.91%	2042	100.00%

Table-3 Morbidity at different age groups of neonates:

Morbidity pattern	Early Neonate		Late Neonate		Total	
HIE	694	34%	183	9%	877	43%
Infection	87	4.23%	258	12.67%	345	16.9%
Prematurity	180	8.84%	14	0.7%	194	9.54%
MCM	82	4%	10	0.5%	92	4.5%
MAS	93	4.5%	45	2.25%	138	6.75%
Jaundice	82	4%	46	2.3%	128	6.3%
RDS/Other Resp. Dis	71	3.46%	50	2.45%	121	5.91%
Others	99	4.87%	48	2.4%	147	7.27%
Total	1388	68%	654	32%	2042	100%

HIE- Hypoxic Ischaemic Encephalopathy, MCM- Major Congenital Malformation, MAS- Meconium Aspiration Syndrome and RDS- Respiratory Distress Syndrome.

Table-4 Management of the cases in study area:

Treatment given	Number of Cases (n=2042)	Percentage (%)
Oxygen inhalation(O2)	594	29.09%
Phototherapy	337	16.50%
Antibiotics only	254	12.44%
Exchange transfusion	176	08.62%
Mixed treatment (More than one treatment)	450	22.03%
Others(Incubation ,KMC, Proper BFP,observation)	231	11.32%
Total	2042	100.00%

Table-5 Outcome of cases:

Outcome	Number of cases (n=2042)	Percentage (%)
Discharge	1359	66.56%
Death	412	20.18%
LAMA	228	11.16%
Referral	43	02.10%
Total	2042	100.00%

LAMA- Left Against Medical Advice

DISCUSSION

MKCG Medical College, Hospital, Berhampur being the tertiary level health care facility for the southern districts of Odisha and some area adjacent to it situated in Andhra Pradesh, most of the out born cases of sick neonate were referred here for specialized management.

In a study by J. A. Owa and A. I. Osinaike [7] on Neonatal morbidity and mortality in Nigeria revealed that out of 7,225 babies admitted into the neonatal unit during the period 3,232 (44.7%) were inborns and 3,993 (55.3%) outborns.

The preterm babies are mostly premature seeking medical attention. Although term babies are mature the increased no of admission in this scenario may be attributed to less reporting of preterm babies who were out born or delivered elsewhere by unskilled workers and get less attention.

A study by Khan MR [8] on "Morbidity pattern of sick hospitalized preterm infants in Karachi, Pakistan" showed, the frequency of preterm birth during study period was 13.3% (251/1885) of which 58% (n = 145) required admission in Neonatal Intensive Care Unit (NICU). Similarly Tonse N.K. Raju [9] conclude in the study that, compared with term infants, late-preterm infants have higher frequencies of respiratory distress, temperature instability, hypoglycaemia, kernicterus, apnea, seizures, and feeding problems, as well as higher rates of re-hospitalization.

The birth weight of a neonate is a single most important determinant of its chances of survival, healthy growth and development. Half of all perinatal and one third of all infant death is due to LBW. [10] Thus it is an important guide to the level of care needed by individual baby also reflects inadequate nutrition and ill health of mother. The two-tailed P value is less than 0.0001 and the association between low birth weight and sex of the child is found to be extremely statistically significant. Thus it indicates that males had a higher propensity of LBW than females in neonatal period. Caroline A Onwuanaku [11] noticed in their study that eighty seven (31.3%) of the babies were of low birth weight, 188(67.6%) were of normal birth weight and 3(1.1%) high birth weight. In another study by H. Shajari [12] noticed that the incidence of low birth weight of the newborns was significantly higher for females (P < 0.05). Similarly a study by Bharati P et al [13] claimed that nearly 20% of newborns have

LBW. Males have less frequency of LBW than female. D Stevenson et al [14] studied on sex differences in outcomes of very low birth weight infants and found that mortality for boys was 22% and that for girls 15%. Boys had a higher risk (OR > 1.00) for most adverse neonatal outcomes.

Elhassan M. Elhassan [15] conducted a study which revealed that a total of 1211 (29.5%) out of 4098 in-born neonates were admitted during study period. The major indications for neonatal admission were; infections 300 (24.8%), low birth weight (LBW) 307(25.4%) and asphyxia 130(10.7). Mukhtar-Yola M [16] observed in the study that the leading diagnoses were birth asphyxia (27%) (Severe birth asphyxia 18.1%, moderate asphyxia 8.9%), neonatal sepsis (25.3%) and prematurity (16.0%) among the cases admitted.

At SNCU majority of the sick neonates with very severe disease belonging to pink or yellow classification according to IMNCI guidelines were admitted and rest were came for minor illnesses like LBW /Preterm baby for stabilization and observation only. Most of them given either O2, phototherapy, antibiotics or mixed treatments.

Not all babies who were admitted needed intensive care. Over one-third of the workload of the typical unit was generated by infants of normal or near normal birth weight who were admitted for a short stay and received no special medical treatment. This is similar to our observations from many surveyed units that, in many instances, the babies were admitted for observation. This increased the workload and the bed occupancy rate, and the quality of care suffered. Experiences from many countries indicate that care gets compromised as a result of admission overload. [17]

Regarding the outcome out of the total cases admitted 1/5th died. Such a high rate of NMR could be attributed due to delay

in assessment, referral at peripheral level & delay in start of treatment. A study by Abdalatif. M Rajab, Ali. M Ghareba on "Neonatal Mortality Rate in the Special Care Baby Unit (SCBU)" at Gharian Teaching Hospital inferred that, out of 1267 cases admitted to the SCBU over one year 58 cases were died with an overall mortality rate (4.57%). [18]

A previous study from KCMC, NCU in 2003 including both inborn and out-born neonates reported 19% neonatal mortality. [19] The variations in mortality probably reflect local and national differences in care pattern of newborn babies.

CONCLUSION

The SCNUs are a critical investment to curb the neonatal mortality rate in India. Not only these are difficult to establish but it is equally important to maintain their performance. There are challenges which need to be looked on while achieving the MDG. The present study revealed some of the facts which will help us to assess the present status of neonatal health.

The study revealed that majority of sick neonates admitted were out-born. This could be attributed to more complication in out-born babies compared to in-borns where there is all the majors to manage different illnesses. Similarly most of them are term babies; this might be due to lack of awareness and less reporting of preterm babies.

In-depth interview of the parents revealed that among all the cases registered at SNCU majority were having weight less than 2.5 kg. There was also higher propensity of low birth weight in male neonates indicating biological fragility of male babies in their initial period of life.

The most common cause of neonatal morbidity in early neonates was hypoxic ischemic encephalopathy followed by prematurity and infection was the main cause of admission in late neonates. The health of the mother and care she had received before, during and immediately after giving birth could be the factor responsible for neonatal illnesses.

The NMR is quite high, and the common cause of mortality was hypoxic ischemic encephalopathy followed by prematurity and infection .This might be attributed toinadequate care during pregnancy, birth injuries resulted from poorly managed intra-natal care and lack of access to obstetric services.

Nearly one – fifth of cases had succumbed to the death even after treatment in the SNCU indicating the fatality of the neonates is also high if not properly diagnosed and promptly treated in the initial stages of illness and referred timely before complications.

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