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Short Communication

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Neonatal Admission at Neonatal Intensive Care Unit in National Heart Center, 2011

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ABSTRACT

The neonatal period is the first 28 days of life, it represented the most dangerous duration of life due to fragility and suitability to many hazards in the world. The study aimed to identify the causes of admission, and to estimate the admission duration of different causes in neonatal intensive care unit (NICU) at National Heart Center during 2011. The study was descriptive cross sectional type, conducted at National Heart Centre, from 1-1-2011 till 31-12-2011, was involved 195 babies, all were admitted at NICU. Data collected by reviewing the medical records of admitted patients and analyzed by SPSS version 21.

Out of total 195 patients, 61% of admitted babies were males, mean age was 1.87 SD ± 3.15 days, 76% were in first 24hrs of age, 88.7% of cases were full term babies and 66.2% of babies were delivered by normal vaginal. Septicemia was responsible for 24.6% of admission followed by respiratory distress syndrome 16.9%. Mean birth weight was 3238 ± 770 grams. Birth asphyxia patients had the highest duration of stay at hospital, with mean of 5.5 ±3.6 days. Other causes of admission have almost same duration of hospital stay.

The most common causes of admission in neonatal ICU in National Heart Center during 2011 were septicemia and Respiratory distress syndrome and most of them were male, term with normal birth weight. Normal vaginal was the most common mode of delivery and majority of them admitted within 1st 24hrs of life. The mean length of hospital stay was 4.47 ± 2.6 days.

Key words- *Neonate; Risk factors; Causes; Admission.*

INTRODUCTION

The neonatal period is a highly vulnerable time for an infant completing many of the physiologic adjustments required for life outside the uterus. As a result, there were high rates of morbidity and mortality. The three major causes of mortality in developing countries include prematurity, infection, and perinatal asphyxia.[1] Neonatal mortality contributes between 40-70% of infant mortality.[2] In most developing countries, nearly half of perinatal deaths occur during the antepartum or intrapartum period, and the rest during the first week of life. The causes of neonatal deaths that were observed vary across countries and geographical locations.[1] Babies born very preterm (i.e. gestational age < 32 weeks) and with very low birth weight (VLBW) (< 1500 g) have mortality rates of over 50% in many low-resource settings and are at a higher risk of disabilities and impairments.[3,4]

More than 80% of all newborn deaths result from three preventable and treatable conditions – complications due to prematurity, intrapartum-related deaths (including birth asphyxia) and neonatal infections. Improving quality of care around the time of birth will save the most lives, but this requires educated and equipped health workers, including those with midwifery skills, and availability of essential commodities.[5] Approximately 9% of all births require special or neonatal intensive care usually needed for only a few days, such observation may last from a few hours to several weeks. Since neonatal mortality largely depends on birth weight and gestational age, because most neonatal mortality occurs within the first hours and days after birth, the outlook improves dramatically with increasing postnatal survival.[6] Neonatal morbidity and mortality rates reflect a nations' socioeconomic status, as well as the efficiency and effectiveness of their healthcare services.[7] Neonatal intensive care continues to develop as medical specialty but concern has grown regarding the quality of life of high risk people.[8]

The present study aimed to identify the causes of admission and to estimate the admission duration of different causes in neonatal intensive care unit at National Heart Center during 2011.

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MATERIALS AND METHODS

The study was a descriptive cross sectional type, conducted at NICU at National Heart Centre, from 1-1-2011 till 31-12-2011. It included all babies, who were admitted at NICU. Data were collected from patients' files and records and then plotted these date in master sheet which contain items including: age, sex, Gestational age, mode of delivery (normal vaginal delivery (NVD), forceps, elective cesarean section (ELCS), emergency cesarean section (ECS)); birth weight, cause of admission, duration of stay at the hospital.

The data analyses were done by software programs "SPSS" (statistical package for the social sciences) version 21. Descriptive statistics as mean ± SD and percentages were used. *T* test and *Chi* square test were used to study association; *P* value < 0.05 was considered statistical significance.

Permission was obtained from hospital manager and the data were treated anonymously.

RESULTS

There were 196 babies admitted to NICU during study period, but one case was deleted because of incomplete recording. The age of newborns who were admitted to NICU ranged between 1 day to 27 days, with mean age of 1.87 ± 3.15 days. However the most predominant age was 1st 24hrs and it represented 76%; 61% of the cases were male, male to female ratio was 1.6:1.

The majority (88.7%) of neonates were full term and 66.2% of babies were delivered by normal vaginal delivery(NVD), mean birth weight was 3238 ±770 grams, and 75.4% of cases were between 2500 to 3999 grams (Table 1).

Table 1: Characteristics of admitted babies to NICU, 2011(N=195)

Characteristic	No.	%
Sex:		
Male	119	61.0
Female	76	39.0
Gestational age:		
Pre term	15	7.7
Term	173	88.7
Post term	7	3.6
Mode of delivery:		
NVD	129	66.2
Forceps	2	1.0
Vacuum	11	5.6
ELCS	12	6.2
ECS	41	21.0
Birth weight:		
VLBW*	4	2.1
LBW**	20	10.3
Normal	147	75.4
Macrosomia	24	12.3

* VLBW: very low birth weight, **LBW: low birth weight

Results demonstrated that the septicemia was the primary cause of neonatal admission (24.6%), followed by respiratory distress (16.9%), neonatal jaundice (12.8%), then meconium aspiration (8.7%); Miscellaneous causes like poor feeding, neonatal convulsion , and vomiting were 21% of the cases. There were no significant difference between causes of admission with sex of baby, mode of delivery and gestational age (*P*=0.47, 0.51, 0.66 respectively), but there was significant difference between birth weight and the causes of admission *P*= 0.001 (Table 2).

Table 2: Causes of admission to NICU in National heart center, 2011

Cause	Frequency	Percent
Septicemia	48	24.6
Respiratory distress	33	16.9
Jaundice	25	12.8
Meconium aspiration	17	8.7
PROM	15	7.7
Birth asphyxia	9	4.6
Birth trauma	3	1.5
Congenital anomalies	4	2.05
Others	41	21.0
Total	195	100.0

Birth asphyxia patients had the longest duration of stay at the hospital, with mean of 5.5± 3.6 days, followed by congenital abnormality, neonatal jaundice, meconium aspiration, respiratory distress, septicemia. There was no significant difference between the cause of admission and the duration of staying at hospital (*P* >0.05) (Table 3).

Table 3: Distribution of causes of admission by duration of admission in NICU in national heart center, 2011

Cause of admission	No.	Duration of admission Mean ±SD
Septicemia	48	4.28±2.2
Respiratory distress	33	4.66±2.23
Neonatal jaundice	25	4.84±2.13
Meconium	17	4.76±2.70
PROM	15	3.1±1.25
Congenital anomaly	9	5.55±3.6
Birth asphyxia	3	4.8±4.9
Birth trauma	4	3 ±1.7
Miscellaneous	41	4.49±3.24
Total	195	4.47±2.59

DISCUSSION

Among many neonatal conditions, the three major contributors to the global burden of neonatal disease are premature birth, birth asphyxia, and neonatal infections.[1]

In this study there was a male predominance, it represented 61% of admitted babies. Similar finding was reported with other study[9-12] and this could be due to cultural and social factors whereby male babies are more likely to receive medical care compared to female.

In present study the normal vaginal delivery had the highest frequency among babies who were admitted in NICU of national heart center during 2011. The reason could be that doctors restricted admission policy and admitted mothers with low risk delivery, which going with results of Zietoun et al[9], Uogue et al[11] and Maryam et al[12] studies. In this study prematurity was the 2nd reason for admission and represented 7.6% of total neonatal admission, which was higher than the study done in Karachi[7]which reported that 6.8% of neonates were admitted for prematurity. While in Zitoun et al study reported that preterm represented 15% of total admissions [9], and in Hoque et al study it was 23.5 %.[11] In present study showed that the septicemia was the most common cause of neonatal admission (24.6%), followed by respiratory distress (16.9%), and neonatal jaundice (12.8%). This is different from a study done Iran were jaundice was the main cause of admission.[12]

Results of studies done by Rahim et al[10] and Syed et al[7] showed that the main causes of admission were birth asphyxia, neonatal septicemia, and prematurity. Study done by Blandina et al in Tanzania, described that the leading causes of admission were birth asphyxia, prematurity, neonatal infection.[13]

Birth weight less than 2500 gram were accounted 12.4% of cases; compared to 39% in Lahore, 36% in Larkana, 55.4% in Karachi and 41.2% in Peshawar, 13.25% in a Bangladesh and 11.02% in an Ethiopian.[7] LBW is low, this could be due admission policy followed in maternity and neonatal intensive care unit that they don't accept high risk mothers.

There were no significant difference between causes of admission with sex of baby, mode of delivery and gestational age but there was significance difference between birth weight, similar with Maryam et al study, where infants' gender and mode of delivery had no significant relationship with the cause hospitalization and birth weight and gestational age were significantly related to the causes of admission in hospitals (P>0.0001).[12]

In this study the average period of stay at the hospital was 5 days with mean of 5.5± 3.6 days, and there were no significant variation between different causes of admission in NICU and length of stay at the hospital. This may be due to lack of standard approach to reach diagnosis especially when it found that septicemia, birth asphyxia and neonatal jaundice nearly have the same duration of stay in NICU and it apparently should not be. Compared with other studies the mean hospital staying was 6.9-7.9 days in Zitoun study [9] and 9.2 days in Houqe et al study.[11]

In this study the majority of admitted babies were admitted during the 1st 24 hours of life, similar results were reported by other studies.[10, 7]

CONCLUSIONS

The most common causes of admission in neonatal ICU at the National Heart Center during 2011 were septicemia and respiratory distress syndrome, most of them were male and term with normal birth weight. Majority of them admitted within 1st 24hrs of life. All causes of admission have almost same duration of admission.

RECOMMENDATIONS

Use the international classification of disease (ICD10) as standard approach for diagnosis in NICU and further studies are needed to support this study.

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