ORIGINAL RESEARCH

Neonatal outcome of the patients admitted in ICU

[1]Dr. Jaishree Ambhore, [2]Dr. Yaqoob Ahmad, [3]Dr. Priyanka Choudhary, [4]Dr. Iqbal Mohammed Ansari

[1]Professor, Department of Pacdiatrics, Chirayu Medical College & Hospital, Bhpopal.
[2]Assistant Professor, Department of pacdiatrics, Chirayu Medical College & Hospital, Bhopal.
[3]Assistant Professor, Department of pacdiatrics, Chirayu Medical College & Hospital, Bhopal.
[4]Assistant Professor, Department of pacdiatrics, Chirayu Medical College & Hospital, Bhopal.

Corresponding Author
Dr. Iqbal Mohammed Ansari
Assistant Professor, Department of pacdiatrics, Chirayu Medical College & Hospital, Bhopal.

Received: 15 June, 2023 Accepted: 10 July, 2023

ABSTRACT

Background: Every year globally, four million neonates die in the first 4 weeks of life. The present study was conducted to assess neonatal outcome of the patients admitted in NICU.

Materials & Methods: 80 neonates of both genderswas enrolled. Parameters such as mode of delivery, birth weight, gestational age, indication for admission etc. was recorded. Laboratory investigations such as C-reactive protein (CRP), complete blood count (CBC), positive blood culture and cerebrospinal fluid (CSF) examination was carried out. Outcome after hospitalization in NICU was recorded.

Results: Out of 80 patients, males were 45 and females were 35. The etiology found to be hypoglycemia in 7, neonatal hyperbilirubinemia in 15, cardiac anomaly in 8, congenital anomaly in 4, sepsis in 16, respiratory distress in 20 and birth asphyxia in 10 patients. The difference was significant (P< 0.05). Gestational age was <34weeks present in 25, 34–36.6weeks in 35 and >37weeks in 20. Birth weight was 1500grams seen in 31, 1500-2500grams in 39 and >2500grams in 10 patients. The mode of delivery was vaginal in 22 and caesarean in 52. The difference was significant (P< 0.05).

Conclusion: Sepsis, respiratory distress, birth asphyxia, hypoglycemia, neonatal hyperbilirubinemia, cardiac abnormalities, and congenital anomaly were the most frequent reasons for NICU hospitalization.

Key words: Neonatal, NICU, mortality

Introduction

Every year globally, four million neonates die in the first 4 weeks of life. Neonatal period is the most vulnerable period of life due to different diseases, especially in preterm and low birth weight babies.[1] Among these approximately 98% deaths occur in developing countries and are caused by infections, asphyxia, complications ofprematurity and low birth weights.[2] Neonatal mortality accounts for nearly two-thirds of infant mortality rate and one-third of under-five mortalities worldwide. Within the first month, one quarter to one-half of all the death occur within first 24 hour of life and 75% occur in the first week.[3] One method of reducing newborn mortality is to raise the standard of neonatal care offered at the institution level. The skills and knowledge of healthcare professionals can be increased, along with providing them with the tools and resources necessary for providing quality care, to improve the quality of neonatal care services.[4] According to studies, neonatal deaths account for the majority of deaths in children under the age of five, with rates as high as 50% in some low-income nations and 35% in the USA. In order to achieve sustainable development, newborn mortality must be reduced to less than 12 deaths per 1000 live births, according to the WHO's 2030 agenda.[5]The present study was conducted to assess neonatal outcome of the patients admitted in NICU.

Materials & Methods

The present study consisted of 80 neonates of both genders. Parental consent was obtained before starting the study. Data such as name, age, gender etc. was recorded. Parameters such as mode of delivery, birth weight, gestational age, indication for admission etc. was recorded. Laboratory investigations such as C-reactive protein (CRP), complete blood count (CBC), positive blood culture and cerebrospinal fluid (CSF) examinationwas carried out. Outcome after hospitalization in NICU was recorded. Data thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant. Table I shows that out of 80 patients, males were 45 and females were 35. Table II, graph I shows that etiology

found to be hypoglycemia in 7, neonatal hyperbilirubinemia in 15, cardiac anomaly in 8, congenital anomaly in 4, sepsis in 16, respiratory distress in 20 and birth asphyxia in 10 patients. The difference was significant (P< 0.05).

Results

Table: I Distribution of patients

Total-80		
Gender	**Males**	**Females**
Number	45	35

Table: II Etiology of ICU admission

Etiology	Number	P value
Hypoglycemia	7	0.01
Neonatal hyperbilirubinemia	15	
Cardiac anomaly	8	
Congenital anomaly	4	
Sepsis	16	
Respiratory distress	20	
Birth asphyxia	10	

Graph I: Etiology of ICU admission

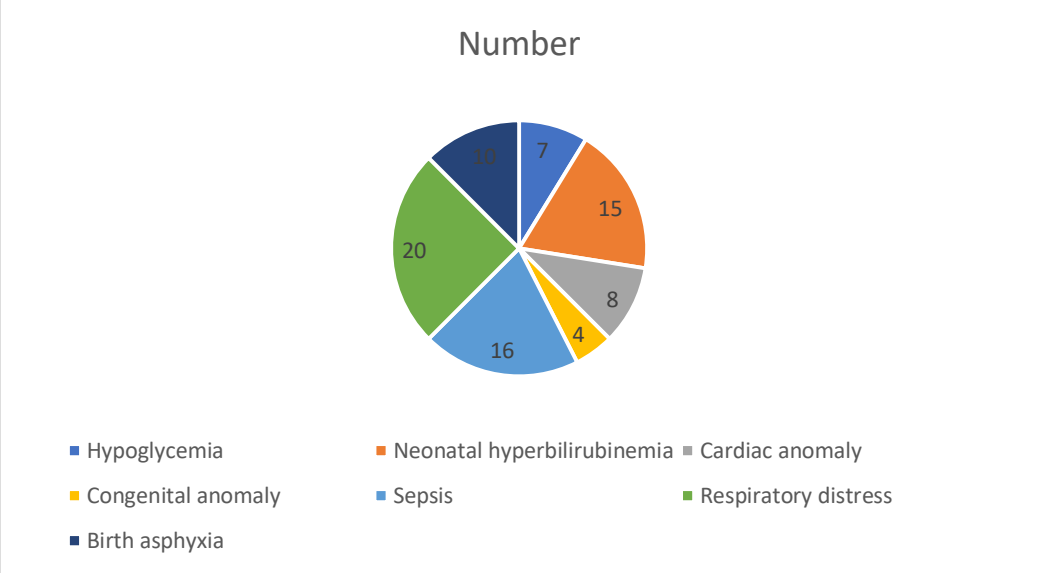

Table: III Neonatal and maternal outcome

Parameters	Variables	Number	P value
Gestational age (weeks)	<34	25	0.87
	34–36.6	35	
	37	20	
Birth weight (grams)	1500	31	0.05
	1500-2500	39	
	>2500	10	
Mode of delivery	Vaginal	22	0.04
	caesarean	52	

Table: IIIshows that gestational age was <34weeks present in 25, 34–36.6weeks in 35 and >37weeks in 20. Birth weight was 1500grams seen in 31, 1500-2500grams in 39 and >2500grams in 10 patients. The mode of delivery was vaginal in 22 and caesarean in 52. The difference was significant (P< 0.05).

Discussion

Neonatal period of a child is most vulnerable period. Infant mortality rate of anycountry reflects its socioeconomic status as well as healthcare efficiency,effectivenessand its outcome.Neonatal immunity status is in maturity phase, so they are more pronetoinfections.[6]Admissions in an Intensive Care Unit depend upon many factors like socioeconomic status, their cultural behavior, literacy, traditional believes and gender bias. Although delivery at term gestation is considered to be low risk, mature neonates with normal birth weight might exhibit certain illnesses that require escalation of care and admission to the NICU.[7,8]First 48 hours immediately following birth is the most crucial period for newborn surviv l.[9]The present study was conducted to assess neonatal outcome of the patients admitted in NICU. We found that out of 80 patients, males were 45 and females were 35. According to Panda PK et al[10], out of a total of 4127 NICU admissions, 3159 (76%) babies were released. Prematurity and associated problems (23%), birth asphyxia (19%), and neonatal hyperbilirubinemia (18%) were the main reasons for admissions in inborn babies. Along with these factors, neonatal sepsis (20%) was a significant factor in NICU admissions for outborn neonates. In blood culture, Escherichia coli and Klebsiella species were the most frequently isolated microbes. Kangaroo mother care was provided to neonates in about 11% of cases, with a median stay of 6 days. Neonatal infection (37%) and problems associated to prematurity (51%) were the main causes of death among newborns. We observed that the etiology found to be hypoglycemia in 7, neonatal hyperbilirubinemia in 15, cardiac anomaly in 8, congenital anomaly in 4, sepsis in 16, respiratory distress in 20 and birth asphyxia in 10 patients. Takleab et al[11] found that the most common primary diagnoses at admission to the neonatal care unit were prematurity with respiratory problem (36.6%), neonatal sepsis (22.7%), and asphyxia (16.2%). Out of the 216 neonates studied, 50 (23.2%) died. High case fatality was observed among neonates with the diagnosis of prematurity with respiratory problem (40.5%) and asphyxia (40.0%). Under multivariate analysis, diagnosis of asphyxia was an independent predictor of mortality while gestational age above the mean of the study population (36.6 weeks) was protective of mortality. We found that gestational age was <34weeks present in 25, 34–36.6weeks in 35 and >37weeks in 20. Birth weight was 1500grams seen in 31, 1500-2500grams in 39 and >2500grams in 10 patients. The mode of delivery was vaginal in 22 and cesarean in 52.1424 neonates hospitalised within 24 hours after delivery were included in Verma et al's[12] study. 767 of the newborn boys were men. In our study, 54% of the newborns had low birth weights. Respiratory distress syndrome (Hyaline membrane disease), the most prevalent cause of respiratory distress, was present in 555 (39%) of newborns among the numerous causes of NICU admission. 24% of newborns had morbidity due to neonatal sepsis, with Klebsiella being the most typical pathogen to develop in blood cultures. 2.5% of people had congenital abnormalities. In our investigation, infant mortality was determined to be 11%. The two most frequent causes of infant mortality in the study were perinatal asphyxia and prematurity with respiratory distress syndrome (Hyaline membrane disease). The limitation of the study is the small sample size.

Conclusion

Authors found that sepsis, respiratory distress, birth asphyxia, hypoglycemia, neonatal hyperbilirubinemia, cardiac abnormalities, and congenital anomaly were the most frequent reasons for NICU hospitalization.

References

1. Makkar M, Gupta C, Pathak R, Garg S, Mahajan NC. Performance evaluation of hematologic scoring system in early diagnosis of neonatal sepsis. J Clin Neonatol. 2013;2:25–29.
2. Vergnano S, Sharland M, Kazembe P, Mwansambo C, Heath PT. Neonatal sepsis: an international perspective. Arch Dis Child Fetal Neonatal Ed. 2005;90:F220–FF224.
3. Awad HA, Mohamed MH, Badran NF, Mohsen M, Abd-Elrhman A-SA. Multidrug-resistant organisms in neonatal sepsis in two tertiary neonatal ICUs, Egypt. J Egypt Public Health Assoc. 2016;91:31–38.
4. Veena Prasad andNutanSingh. Causesof morbidity and mortality admitted in GovernmentMedical College HaldwaniinKumoun Region Uttarakhand India. JPBMS.2011;9(23):1-4.14.
5. Kayange N, Kamugisha E, Mwizamholya DL, Jeremiah S, Mshana SE. Predictors of positive blood culture and deaths among neonates with suspected neonatal sepsis in a tertiary hospital, Mwanza-Tanzania. BMC Pediatr. 2010;10:39.
6. Roy MP, Bhatt M, Maurya V, Arya S, Gaind R, Chellani HK. Changing trend in bacterial etiology and antibiotic resistance in sepsis of intramural neonates at a tertiary care hospital. J Postgrad Med. 2017;63:162–168.
7. Turhan EE, Gürsoy T, Ovalı F. Factors which affect mortality in neonatal sepsis. Turk Pediatri Ars. 2015;50:170–175.
8. Negussie A, Mulugeta G, Bedru A, Ali I, Shimeles D, Lema T, et al. Bacteriological profile and antimicrobial susceptibility pattern of blood culture isolates among Septicemia suspected children in selected hospitals Addis Ababa, Ethiopia. Int J Biol Med Res. 2015;6:4709–4717.
9. Salama K, Gad A, El Tatawy S. Sepsis profile and outcome of preterm neonates admitted to neonatal intensive care unit of Cairo University Hospital. Egyptian Pediatric Association Gazette. 2021 Dec;69:1-9.
10. Panda PK, Panda PK. Clinical profile and outcome of newborns admitted to a secondary-level neonatal intensive care unit in tribal region of Odisha. J Clin Neonatol2019;8:155-61.
11. Tekleab AM, Amaru GM, Tefera YA. Reasons for admission and neonatal outcome in the neonatal care unit of a tertiary care hospital in Addis Ababa: a

prospective study. Research and reports in neonatology. 2016;6:17.
12. Verma J, Anand S, Kapoor N, Gedam S, Patel U. Neonatal outcome in new-borns admitted in NICU of tertiary care hospital in central India: A 5-year study. Int J ContempPediatr 2018;5: 1364-7.