Research Paper

Causes of admission and outcome among newborns in University Hospital in Sana'a-Yemen

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Abstract

Objectives: To study the main causes of admission and outcome among newborns in the nursery unit at Al-Kuwait hospital, Sana'a.

Methods: Design retrospective descriptive study of all cases admitted in Al- Kuwait hospital, Sana'a (From 1st January 2014 to 31st December 2015). Data of all the neonatal admissions in the nursery unit was recorded and analyzed for age, sex, the reason for admission, duration of hospital stay and the final outcome of these patients.

Results: A total of 692 neonates were admitted to the neonatal unit in Al-Kuwait hospital – 2014-2015. Among them, males were 334 (48.3%) and females were 358 (51.7%). The average length of stay was 6.2 days (SD 6 days). According to the mode of delivery Caesarean section represent about 59.6% of all admission in 2015. Low birth weight accounted for 37.6% (Prematurity (30.3%) and IUGR (7.3%)) of total admissions. Respiratory problems were the next major cause of admission (26.1%). Neonatal infections only represent (11.6 %) of admission. Among total admissions 79.8% were discharged with a satisfactory condition, 12.7% died, 6.6% left against medical advice (LAMA) including that discharged on their attendants request and 0.9 % referred to another hospital.

Conclusion: This study found the low birth weight, prematurity, respiratory problems, and neonatal infection were the main causes of neonatal admissions. Increased awareness for in time referral to tertiary level hospitals is mandatory by those health workers who conduct deliveries at private hospital /maternity homes as well as those who conduct deliveries at homes.

Keywords: Newborns; Admission; Outcome

Introduction

The perinatal period is recognized as the most dangerous period of life because of various problems faced by the neonates. [1]. The neonatal period is a highly vulnerable time for infants as they are completing many of the physiologic adjustments required for extra-uterine existence[2]. Over nine million children in the world die every year during the perinatal and neonatal periods and nearly all (98%) of these deaths occur in developing countries. Neonatal mortality contributes to 40-70% of infant mortality.

Trends in mortality show perinatal and neonatal mortality are declining less rapidly compared to infant and under 5 years old mortality [3]. 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. Perinatal and neonatal deaths in developing countries are known to occur primarily because of poor maternal health, adverse social conditions, and inadequate care during pregnancy, delivery, and the immediate postpartum period [3]. It is thus important that the causes of perinatal morbidity and mortality are measured and monitored in order to develop strategies to improve perinatal health care at different levels (community and institutions). The high neonatal morbidity and mortality rates attest to the fragility of life during this period; of all deaths occurring. In the 1st year of life in the United States, two-thirds are in the neonatal period. The annual rate of deaths during the 1st year is unequaled by the Rate in any other period of life until the 7th decade[2]. Newborn in Yemen represents a big group of populations due to the high fertility rate in Yemen (4.4), crude birth rate (39.2%) and neonatal mortality rate (36)[4]. Our research discusses the causes of full-term newborn admission at a nursery in Al-Kuwait hospital, Sana'a which contains 10 incubators with acceptable health services and the presence of some sides of defects such as no availability of mechanical ventilators and some drugs as a surfactant and there is no any surgical intervention. There is many causes of admission to nursery unit as high-risk infants other than prematurity as patients with genetic disorder, intrauterine growth restriction, neonatal jaundice blood group sensitization, multiple gestation, mother illness such as hypertension, diabetes mellitus and some drug administration during pregnancy, premature rupture of membrane, respiratory distress, bodyweight either Less than 2.500 or greater than 4.000g or birth less than 37 or more than 42 weeks of gestation and congenital malformation [2]. There are many studies about causes of admission of neonates, which low birth weight accounts of majority cause of admission followed by neonatal infections [5], [6] and the major cause of mortality among admission at nursery is prematurity followed by birth asphyxia then infection [7].

The objective of this study

A To study the main causes of admission and outcome among newborns in the nursery unit at Al-Kuwait hospital, in Sana'a Yemen. We specific objective according to determine the main causes of admission in nursery unit among newborns. As well, distribute the causes according to the severity and the different body systems. Moreover, evaluate the effects of antenatal care during pregnancy, mother age, and mode of delivery on the possibility of admission. Additionally, to assess the outcome among these newborns. Finally, compare the causes of that mentioned in local and international studies.

Methods and materials

Study design: This is a retrospective exploratory descriptive study of causes of neonatal admission and outcome in Al-Kuwait hospital Sana'a, Yemen.

Place of study: The study was conducted in the Neonatal Unit of University Al-Kuwait hospital, Sana'a, Yemen.

Duration of study: From 1st January 2014 to 31st December 2015.

Population and sampling method: All neonates were admitted in the Neonatal Unit of University Al-Kuwait hospital, Sana'a, 2014 and 2015.

Study instrument: Data collected from medical reports and patients files in neonatal unit by closed-ended questionnaire (variables form).

Definitions of variables: Newborn were any baby less than 28 days of age. Full-term were baby borns with gestational age more than 37 completed weeks and less than 42 weeks. Premature were baby borns with gestational age less than 37 completed weeks. The causes of admission were Low Birth Weight, Neonatal Jaundice, Intra-Uterine Growth Retardation, Respiratory Distress Syndrome, Neonatal infection, Birth asphyxia, Congenital anomalies, Blood disorders, Infant of a diabetic mother, Medical illness of the mother, and Transient Tachpnoea of newborn. The present study divided into dependent and independent variables. The dependent variables of the study are Causes of admission and outcome in the nursery of Al-Kuwait hospital, Sana'a. Whereas, the independent variables of the study included the first, neonates variables [Gestational age (Full term or Premature)] Age of newborn in days, sex, and body weight (kg)]. The second, mother variables [age of mother (years), antenatal care, medical illness of mother (diabetes, hypertension, …), gravity and parity (number of children), residence, delivery mode, NVD (normal vaginal delivery), assisted vaginal delivery, and LSCS (lower segment cesarean section)]. The third, admission variables [total number of admission, duration of stay (days), outcome, cured refer, dead and LAMA (Left Against Medical Advice)].

Inclusion Criteria: All newborns with available data admitted in the Neonatal Unit.

Exclusion Criteria: Unavailable information files.

Data Analysis: The collected data and the results of this study were statistically analyzed by using SPSS program version 20 and presented by the Microsoft Excel program.

Results

The total number of babies admitted to neonatal unit in Al-Kuwait hospital – 2014-2015 was 692 babies Among them 334 (48.3%) were male and 358 (51.7%) female (predominance of females). The average length of stay was 6.2 days (SD 6 days). The distribution of deaths according to disorders is shown in table 2.

Table 1: The total number of babies admitted to the neonatal unit in Al-Kuwait hospital– 2014-2015.

	Full-term	Preterm	Total
Total Number	**448**	**244**	**692**
%	**64.7**	**35.3**	**100**

Table 2: Length of stay in the neonatal unit in Al-Kuwait hospital – 2014-2015.

Nu.	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
692	51.00	1.00	52.00	6.2225	6.00696	36.084

According to the mode of delivery Cesarean section represent about 59.6% of all admission in 2015.

Table 3: Mode of Delivery in the neonatal unit in Al-Kuwait hospital in 2015.

	Cesarean section	Normal Vaginal Delivery	Total
Total Number	205	139	344
%	59.6	40.4	100.0

Table 4: Causes of admissions to the neonatal unit in Al-Kuwait hospital – 2014-2015.

Causes of admissions	Total	Percentage %
*Low birth weight	243	37.6%
Respiratory problems	169	26.1
Neonatal Infection	75	11.6
Mother Problems	51	7.9
Endocrine	27	4.2
CNS (Birth asphyxia)	21	3.2
Precious baby	21	3.2
Congenital anomalies & $	18	2.8
Birth Trauma	6	0.9
Post date	6	0.9
Observation	4	0.6
GIT problems	3	0.5
Poor sucking	3	0.5
Total	647	100

* Low birth weight including Prematurity 196 (30.3%) and IUGR 47 (7.3%).

Causes of admission in the neonatal unit in Al-Kuwait

hospital – 2014-2015

Of the 692 babies, 243 (37.6%) were admitted due to low birth weight (Prematurity (30.3%) and IUGR (7.3%)). Respiratory problems were the next major cause of admission (26.1%). Other causes of admission were Neonatal infection (11.6 %), Mother Problems (7.9%), hypoglycemia (including infants of diabetic mothers) (4.2%) and birth asphyxia (3.2%). Causes of admissions to the neonatal units in Al-Kuwait hospital – 2014-2015 are shown in (**table 4**).

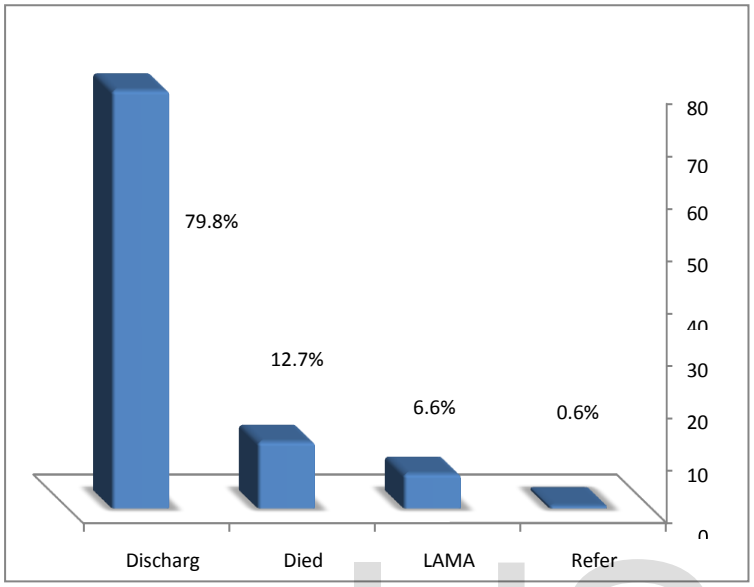

Figure 1: Outcome of admissions to the neonatal unit in Al-Kuwait hospital – 2014-2015

The overall neonatal mortality rate was 12.7% (88 deaths among 692 admissions).

The outcome of admissions to the neonatal unit in Al-Kuwait hospital – 2014-2015:

Of total admission, 79.8% were discharged with satisfactory condition, 12.7% died, 6.6% left against medical advice (LAMA) including that discharged on their attendants request and 0.9 % referred to another hospital (**figure 1**).

Discussion

This study attempts to identify the causes of neonatal admission and pattern of outcome in a neonatal unit in Al-Kuwait hospital – 2014-2015. The data obtained from our study shown that the maximum number of cases (37.6%) admitted due to Low birth weight and this is less percentage than the results from other studies such as *Fazlur R* et al. (41.20%) [6] and Parkash J et al (55.4%)[5]. On the other hand, The respiratory problems represent the next cause of admission in our study (26.1%) then neonatal infections (11.6%) , mother problems (7.9%) and others. Additionally, there were less numbers of cases of neonatal infections in our study (11.6%), in comparison to results from other studies such as Fazlur R et al. (14.87%)[6], M Hoque et al. (21.0%)[8] and Parkash J et al (45.21%)[5]. Furthermore, there were much less numbers of cases of Birth asphyxia in our study (3.2%) while results from other studies were higher number of cases asphyxia such as *Fazlur R* et al. (16.52%) [6], M Hoque et al. (38.2%) [8], Raghvendra N (12%) [9] and Parkash J et al (18.85%) [5].

Moreover, the average length of stay of admission in the neonatal ward was (6.2 days) in evaluation to results from another study conducted by M Hoque et al. (9.2 days) [8]. Also, in this study the overall mortality was 12.7% which was satisfactory in comparison to reports of other studies such as Garg P et al (35%)(1), Fazlur R et al. (28.98) [6] and Parkash J et al (25%) [5]. According to the mode of delivery Caesarean section represent about 59.6% of all admission in 2015 and this high percentage
compared to the study conducted by M Hoque et al (about 17.1%) [8].

Table 5: Comparison of our study with other 3 studies from neonatal care centers

Parameters	Our study	*Fazlur R* et al.	Raghvendra Narayan	Parkash J et al
Study period	2 years	12 months	12 months	12 months
Total admissions	692	1694	212	1984
First three causes of admission	Low birth weight (37.6%) Respiratory problem (26.1%) Neonatal Infection (11.6%)	Low birth weight (41.20%) N. Infection (28,98%) Birth asphyxia (16.52%)	N. jaundice (54%) Low birth weight (13.5%) Birth asphyxia (12%)	Low birth weight (55.4%) N. Infection (45.21%) Birth asphyxia (18.85%)
Mortality %	12.7%	14.87%	17%	25.5%

Early recognition of neonatal problems and immediate intervention led to a few complications and sequelae. A thorough examination of a baby just after birth for early recognition and timely referral of surgical conditions led to better outcomes.

Conclusions

Our study showed that there are relatively greater numbers of admissions of neonatal low birth weight and respiratory problems and lesser numbers of neonatal infection cases. The overall mortality rate was less, but higher for the babies with low birth weight and is consistent with the findings from some developing countries. A significant number of these deaths are avoidable through improved quality of antenatal, intrapartum and postpartum care. The known predisposing factors for neonatal infections are poor obstetric care and some of the deliveries are conducted at home and outside health facilities. Antenatal and intrapartum monitoring of high-risk pregnancies, timely referral, and resuscitation at the time of birth at all health facilities should be mandatory to reduce the high case fatality and morbidity. Increased awareness for in time referral to tertiary level hospitals is mandatory by those health workers who conduct deliveries at private hospital /maternity homes as well as those who conduct deliveries at homes.

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Dedication

To my daughter (**Sala**) and all my family, and to all children in my country.

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