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Morbimortalidade Neonatal em Unidade de Terapia Intensiva

Neonatal Morbidity and Mortality in Intensive Care Unit

La morbilidad y mortandad neonatal en Unidad de Cuidados Intensivos

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RESUMO: Este estudo objetiva descrever as morbidades e mortalidade de recém-nascidos internados em Unidade de Terapia Intensiva Neonatal. Neste contexto, utilizou-se abordagem descritiva, transversal, usando dados dos prontuários dos recém-nascidos internados em Unidades de Terapia Intensiva Neonatal, com uma população constituída por trinta neonatos, e os dados foram analisados através de frequência simples e percentual. Os resultados identificaram que a maioria dos neonatos era do sexo masculino, com nascimento pré-termo e de parto vaginal. As afecções respiratórias foram as principais morbidades encontradas na unidade e o óbito foi o desfecho clínico de 23,1% dos casos. As morbidades como a prematuridade pode trazer consequências respiratórias ao recém-nascido, e a unidade tem papel importante na assistência neonatal. Sugere-se dar seguimento às investigações para embasar cientificamente ações de promoção de saúde para

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as gestantes e ações de conscientização aos profissionais de saúde no município.
Palavras-chave: Recém-nascido. Epidemiologia. Unidades de Terapia Intensiva Neonatal.

ABSTRACT: This study aims to describe the morbidity and mortality of neonates admitted to the Neonatal Intensive Care Unit. In this context, a descriptive, cross-sectional approach was used, using data from the charts of neonates hospitalized in a Neonatal Intensive Care Unit, with a population consisting of thirty neonates and data analyzed by simple and percentage frequency. The results identified that most of the neonates were males, with preterm birth and vaginal delivery. Respiratory diseases were the main morbidities found in the unit and the death was the clinical outcome of 23.1% of the cases. Morbidity such as prematurity can bring respiratory consequences to the newborn and the unit plays an important role in neonatal care. It is suggested to follow the investigations to scientifically base health promotion actions for pregnant women and awareness actions for health professionals in the municipality.
Keywords: newborn; epidemiology; neonatal intensive care units.

RESUMEN: Este estudio tiene como objetivo describir la morbilidad y mortandad de recién nacidos ingresados en la Unidad de Cuidados Intensivos Neonatales. En este contexto, se utilizó un enfoque descriptivo, transversal, usando los datos de las historias clínicas de recién nacidos ingresados en la Unidad de Cuidados Intensivos Neonatales, con una población de treinta neonatos. Se analizaron los datos a través de la secuencia simple y del porcentaje. Los resultados indicaron que la mayoría de los recién nacidos eran del sexo masculino, con el parto prematuro y el parto vaginal. Las enfermedades respiratorias fueron las principales morbilidades que se encuentran en la unidad y la muerte fue el resultado clínico en 23,1% de los casos. Las morbilidades como la prematuridad pueden traer consecuencias respiratorias para el recién nacido y la unidad juega un papel importante en la atención neonatal. Se sugiere dar seguimiento a las investigaciones científicas para apoyar las actividades de promoción de la salud a mujeres embarazadas y realizar campañas de concienciación a profesionales de la sanidad de la ciudad.
Palabras clave: recién nacido; epidemiología; unidades de cuidados intensivos neonatales.

INTRODUCTION

The first days of life of a newborn are marked by a phase in which there is a high risk of morbidity and mortality due to their condition of biological vulnerability. In this context, the Neonatal Intensive Care Units (NICUs) represent an environment of high concentration of life-support technologies, ready to provide care in the most differentiated degrees of complexity and ensure the best clinical management of the most serious newborns[1]. In the NICUs, respiratory disorders in along with neonatal infections account for 50.8% of the morbidities presented, with cardiac disorders accounting for 8.4% and 5.31% of babies who are born with some type of

congenital malformation[2,3]. The main reasons for newborns hospitalization are due to respiratory causes, low birth weight, prematurity and neonatal jaundice[2,3]. These morbidities can be reduced through actions of the health programs, such as "Rede Cegonha" and "Kangaroo Method", for example, which allow adequate assistance from the gestational period until the birth, and humanize the care with the aim of improving the quality of the health services[4].

In Brazil, in 2015, the neonatal mortality rate was 8.9/1000 live births. This rate is relatively high when compared to developed countries like Canada (3.9/1000 live births) and the United States (3.6/1000 live births)[5]. In recent years, Brazil has been reducing child mortality rates; however, it is still distancing itself from the more developed countries, making evident the existing gaps in the quality and reach of the health sector actions[6]. Lansky et al.[7] have associated neonatal deaths with prematurity, low birth weight, maternal risk factors, congenital malformations, and perinatal asphyxia, all of which are strongly linked to the disqualification of care during the prenatal care and childbirth.

The presence of life support technology in neonatal intensive care, such as phototherapy, mechanical ventilation and oxygen therapy, increases the chances of survival of these neonates at risk, which highlights the importance of the NICUs in maternity hospitals[8]. In this context, it is appropriate to outline the neonatal morbidity and mortality profile, since the identification of more frequent perinatal causes may provide subsidies to raise awareness and reinforce assistance to pregnant women in the prenatal period and delivery, avoiding negative outcomes for the neonate. For this purpose, this study aimed at describing the morbidity and mortality profile and interventions in newborns admitted to the NICU in a city in Bahia.

MATERIAL AND METHODS

This is a cross-sectional and descriptive epidemiological study, based on the NICU of the São Judas Tadeu Santa Casa Hospital, located in the city of Jequié/BA, which provides assistance to the cities that make up this micro-region. Initially, there were 42 neonates admitted to the NICU between March and June of 2016, the period related to the research. Twelve newborns have been excluded from the study, because the responsible for signing the Free and Informed Consent Term (FICT) have not been found or did not agree to participate in the study, totaling a final sample of 30 newborns (NB).

The data collection has been done by completing a form developed by the authors based on the variables that meet the objectives of the research, which has collected information from the newborn's chart, the Declaration of Live Birth (DLV) and the Declaration of Death (DD).

The form has been divided into five blocks, which comprise Maternal, Childbirth and Birth Data; Immediate Postpartum - Intercurrences and interventions; Late Postpartum - Intercurrences and interventions; Hospital discharge and Death.

For the investigation of the causes of hospitalization, the categorization of pathologies has been carried out based on the International Classification of Diseases - 10th revision (ICD - 10). In this way, it is emphasized that there is a possibility that the same research individual may present more than one cause of hospitalization. The variable "Weight at birth" was classified as Adequate (≥ 2500g), Low weight (1500g to 2499g), Very low weight (1000g to 1499g) and Extreme low weight (<1000g). In the investigation of the interventions used, it was considered drug therapy, the use of sedatives, antibiotics, analgesics, anticonvulsants, anti-reflux, diuretics and bronchodilators. Deaths were classified as early neonatal (0 to 6 days) and late neonatal (7 to 27 days).

The data collected has been analyzed with the use of SPSS® software version 21.0. Absolute and relative frequency has been used in the analysis. The study has been approved by the Research Ethics Committee of the Universidade Estadual do Sudoeste da Bahia (REC/UESB) under the CAAE No. 49106915.1.0000.0055. The legal representatives have signed the Free and Informed Consent Form, and all the requirements of the Resolution No. 466 of December 2012 of the National Health Council were met.

RESULTS

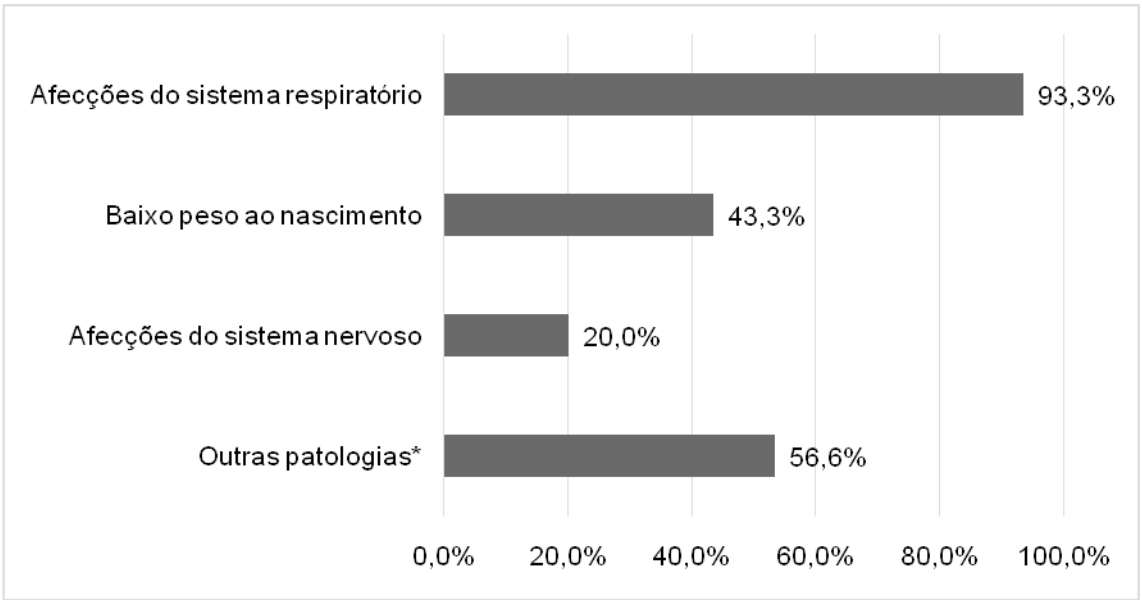
Among the 30 newborns studied, 80.0% were male, 56.7% were born preterm, and 43.3% had their Apgar Scores at the 5th minute considered normal (8 to 10). Regarding the type of delivery and birth, 70% were born vaginally and 40% presented adequate weight at the gestational age. Regarding the maternal characteristics, it has been observed that 53.3% of the mothers were in the age group of 20 to 35 years old, and 53.3% were from the city of Jequié/BA (Table 1).

Table 1 - Newborn, childbirth and maternal characteristics, Jequié/BA, 2016

Variable	N	%
NB gender		
Male	24	80.0
Female	6	20.0
Gestational Age		
Preterm	17	56.7
Term	12	40.0
No answer	1	3.3
Apgar 5th minute		
Normal (8 a 10)	13	43.3
Moderate (4 a 7)	9	30.0
Severe (0 a 3)	3	10.0
No answer	5	16.7
Type of birth		
Vaginal	21	70.0
Cesarean	9	30.0
Birth weight (in grams)		
Adequate (≥2500g)	12	40.0
Low weight (1500g – 2499g)	7	23.4
Very low weight (1000g - 1499g)	4	13.3
Extreme low weight (<1000g)	4	13.3
No answer	3	
		10.0
Maternal age		
< 20 years old	7	23.3
20-35 years old	16	53.3
> 35 years old	2	6.7
No answer	5	16.7
Maternal origin		
Jequié	16	53.3
Other regions	10	33.3
No answers	4	13.3

As for the reason for hospitalization, which could be more than one reason, most infants were admitted to the unit with some type of respiratory disease (93.3%) or low birth weight (43.3%) (Figure 1).

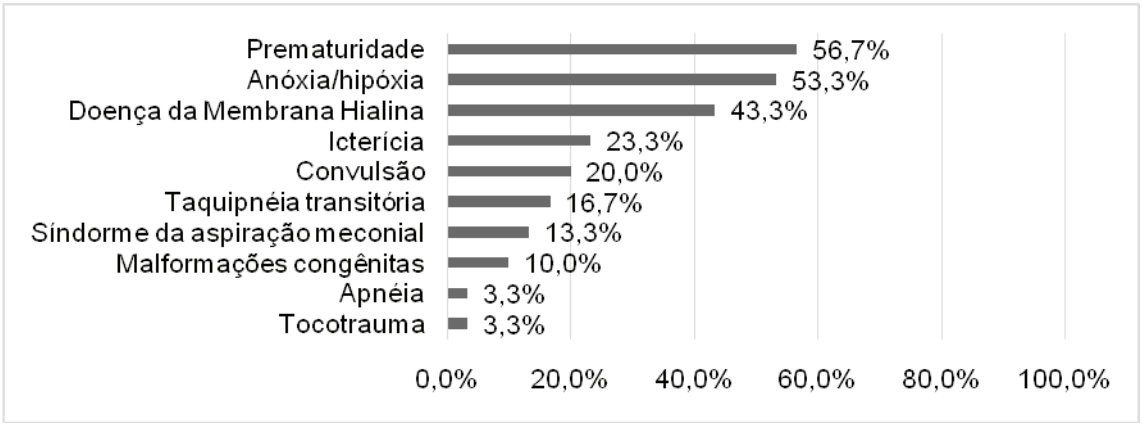
Figure 1 - Causes of hospitalization in the Neonatal Intensive Care Unit, Jequié/BA, 2016



***** Gastrointestinal bleeding, Hypovolemic shock, Sepsis, Hypoglycemia and Jaundice

It has been verified that the main morbidities found in the unit were prematurity (56.7%), anoxia/hypoxia (53.3%) and Hyaline Membrane Disease (HMD) (43.3%), while congenital malformations (10%), apnea (3.3%) and tocotrauma (3.3%) occurred less frequently. **(Figure 2)**

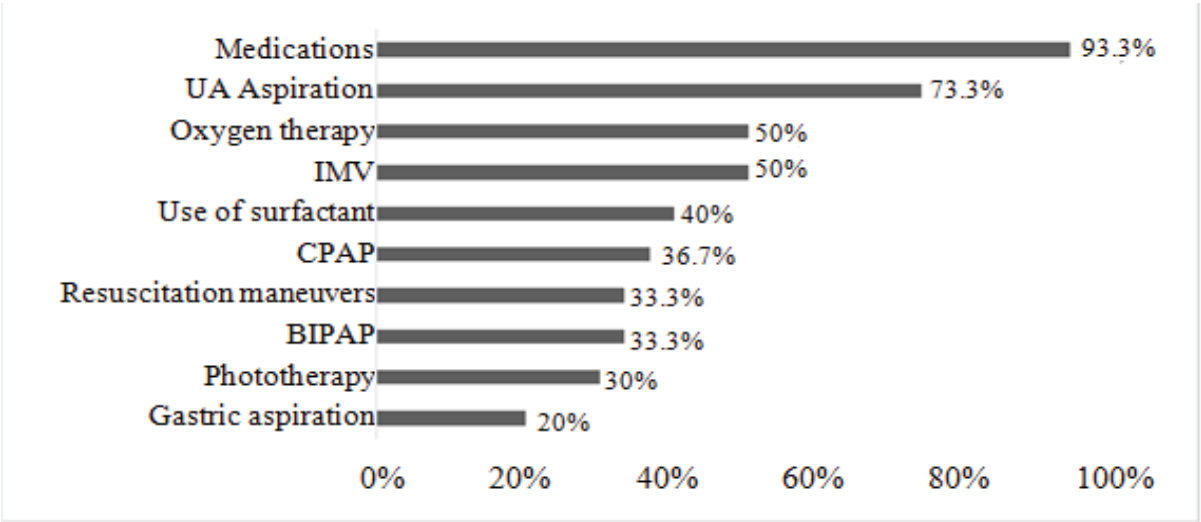
Figure 2 - Main neonatal morbidities in the Intensive Care Unit, Jequié/BA, 2016



Due to the morbidities presented in the neonates, some interventions were performed, with emphasis on the use of medications (93.3%), upper airway aspiration (73.3%), oxygen therapy

(50%) and Invasive Mechanical Ventilation 50%) (Figure 3).

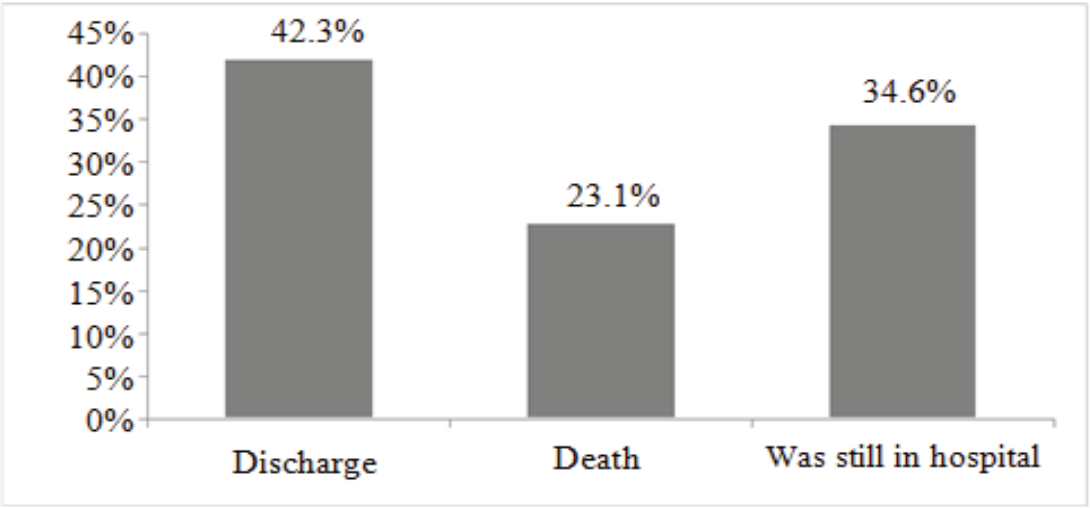
Figure 3 - Interventions in neonates in the Intensive Care Unit, Jequié/BA, 2016



UA: Upper airways; IMV: Invasive mechanical ventilation; CPAP: Continuous positive airway pressure; BIPAP: Bilevel Positive Pressure Airway.

Regarding the clinical outcome of the studied neonates, it has been observed that 42.3% (11) were discharged from the unit before completing 28 days of life; 34.6% (9) remained hospitalized, and 23.1% (6) died (Figure 4).

Figure 4 - Clinical outcome of neonates after 28 days of hospitalization in a Neonatal Intensive Care Unit (n=26), Jequié/BA, 2016



DISCUSSION

The newborns (NB) admitted to an Intensive Care Unit (NICU) in the city of Jequié/BA were predominantly males, preterm birth, through vaginal delivery, with an Apgar Index

considered normal and birth weight ≤ 1500g. The most important causes of hospitalization were related to respiratory diseases, while prematurity was the morbidity most frequently found in the unit. The majority of neonates were discharged, despite the morbidities presented during the period.

The predominance of the studied population was male, as well as other studies conducted in the north, northeast and south of the country[3,10,11]. With regard to the gestational age, there was a predominance of preterm births, corroborating with other studies in the literature, which indicated 66% and 70%[3,10]. Other authors have also revealed prematurity in their studies, but with a higher prevalence, identifying 92.14% and 92.3%[11,12].

Regarding the Apgar Index at the 5th minute, it has been identified that most of the neonates had an index considered normal (score of 8 to 10), as well as the 86.16% found in a study in the north of the country (10) and the 98.1% of a study conducted in the United States[13]. In the present study, there were charts with an unfilled Apgar Score, so it is important to highlight the importance of completing this score, since it is a predictor of neonatal mortality[14].

Regarding the type of delivery, most of the births occurred vaginally, compared with a study done in the north of the country, which presented a total of 44% of vaginal deliveries[10]. Another study carried out in NICUs, conducted a bivariate analysis of the type of delivery and neonatal death, concluding that there is a higher risk of death in cesarean deliveries[15].

There is a tendency in Brazil for the cesarean delivery, as shown in a national hospital-based study, in which the cesarean delivery accounts for 55.4% of total deliveries[16]. As a result, the National Health Agency (NHA) mandated, during the prenatal follow-up, the clarification to the pregnant woman about the risks and benefits of the types of delivery[17]. The high number of vaginal deliveries in this unit can be justified by the fact that the maternity unit has a Natural Delivery Center (NDC), in accordance with the “Rede Cegonha” program.

Regarding birth weight, the neonates presented low weight, very low weight or extreme low weight. Other studies in Brazil have shown a predominance of neonates admitted to NICUs with birth weight ≤ 1500g (10,11), differently from first world countries, in which 84.2% of the newborns are born with adequate weight[13]. Silva et al.[18], with the data from the survey “To be Born in Brazil”, showed that birth weight below 1,500g presented a strong association with neonatal mortality.

Some morbidities, such as prematurity and low birth weight may be associated with the maternal age, and these are more common in newborns of mothers aged ≤ 20 years old and >35 years old[19]. In a case-control study conducted in another NICU in the northeast, a predominance of the maternal age has been observed between 20 and 34 years old, and when the need for hospitalization of the newborn with maternal age was not found, there was no significant

difference[20]. Other studies performed in NICUs across the country also found a higher proportion of mothers aged between 20 and 35 years old[10,21].

The maternity hospital where this study was conducted is the only reference with NICUs to serve the entire micro-region, composed of 26 cities, despite the fact that 53.3% of the mothers are from Jequié, where the unit is located. In this regard, it is distant from the study carried out in the state of Ceará, which observed a higher frequency of hospitalizations of neonates whose mothers did not reside in the same place of the NICU[20]. This difference can be explained by the fact that, in the study developed in Ceará, the reference unit was located in the capital, so it would serve as a reference for the most serious cases in the entire state.

The causes of hospitalizations in this unit were similar to the NICUs studied in the states of Pará, Ceará and Rio Grande do Sul, where respiratory diseases and low birth weight were among the main admission diagnoses[3,10,11]. In these studies, the association of more than one causal factor of hospitalization has also been identified, which evidences the need for qualified multiprofessional care for this risky NB during hospitalization and post-discharge follow-up.

The frequency of morbidities found in this study differs from the study done at a unit in southern Brazil, which observed a higher number of cases of neonatal infections (sepsis), followed by respiratory disorders and jaundice[3]. The prematurity and pathologies related to the respiratory system were more prominent in this study and this may be justified by the fact that the preterm newborn has an immature respiratory system, making the newborn more susceptible to pathologies such as Hyaline Membrane Disease, Transient Tachypnea, and Risk of infection[22]. Intercurrences during delivery may also trigger meconium aspiration syndrome, which is commonly presented in term and post term neonates[22].

During delivery, the neonate undergoes a physiological transformation of the cardiorespiratory system to adapt to the new life environment, therefore, any perinatal morbidities can make this process difficult, making this individual need the life support technology offered at the NICU[8,23]. Although the premature newborn has organ and system immaturity in the long term, the neuro-psychomotor development of these children may not be impaired, especially if they are in a suitable environment to stimulate their abilities[24].

The most frequently used interventions for the control of morbidities were: medication use, upper airway aspiration (UAA), oxygen therapy and invasive mechanical ventilation. Besides these, there is also prominence for the use of non-invasive mechanical ventilation (CPAP and BIPAP) and surfactant use. The drug therapy was performed mainly in the early neonatal period, which refers to an important period for the clinical stabilization of the newborn.

The use of supplemental oxygen, mechanical ventilation and surfactant obtained values that are similar to those found in other studies in the country[10,25]. The greater frequency of

interventions that are interconnected to the respiratory system may be justified by the fact that respiratory diseases were the major cause of hospitalization in the unit.

With regard to infant mortality, the neonatal component is the largest, corresponding to 70% of the deaths[23]. In this study, in relation to the clinical outcome of hospitalized neonates, 23.1% evolved to death. Other studies in the north and southeast of Brazil found a mortality rate of 37.74% and 23.9%, respectively[10,25]. The mortality indicator is an important element to evaluate the development of a region or country, and also to subsidize the public policies in both evaluation of the services and in the health planning of this specific population[23]. Regarding the limitations found in this study, the relatively short period of the research and difficulties encountered with unfilled data is highlighted.

CONCLUSION

The present study shows that morbidities related to the respiratory system were the main causes of hospitalizations and that the death was an important clinical outcome, emphasizing the importance of the NICU implantation in this region in the assistance to the maternal and child binomial. It is suggested to follow up this research to scientifically base the health promotion actions for pregnant women, and to reinforce the awareness of health professionals, emphasizing humanized care as an important means of qualifying care and reducing neonatal morbidity and mortality.

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