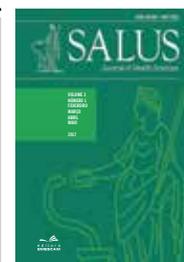




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ORIGINAL ARTICLE

Profile of newborn premature extubated in an Intensive Care Unit Neonatal

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Abstract

This study aims to describe the profile of extubated preterm newborns regarding birth weight, gestational age, classification, time of mechanical ventilation and ventilation modality after extubation, as well as to verify the frequency of physical therapy and resources used. As a methodology, a Field Study was carried out characterized as a transversal study with retrospective data collection, using a convenience sample. A total of 641 records of preterm neonates born between January 2008 and December 2014 were analyzed, hospitalized at the neonatal intensive care unit of the Santa Casa de Misericórdia Hospital in Vitória, submitted to orotracheal intubation. A descriptive analysis considering frequencies and percentages for qualitative variables and mean, median and standard deviation for quantitative variables was performed. The study was approved by the research ethics committee of the School of Sciences of the Santa Casa de Misericórdia de Vitória. The results showed that the profile of the newborns studied was male, 57.9%, low birth weight, 51.2% and moderate premature, 60.3%. The mean mechanical ventilation time was 4.64 days. Of the total number of charts analyzed, 84.3% underwent physiotherapy, of which 98% underwent abdominal thoraco rebalancing techniques and 88.2% required motor physical therapy. It was concluded that the majority of newborns submitted to orotracheal intubation are male, of low weight and of prematurity considered moderate.

Most intubated newborns undergo physical therapy, and the most commonly used technique within the neonatal intensive care unit is abdominal re-equilibration.

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INTRODUCTION

Prematurity has been considered a broad public health problem, especially in developing countries^{1,2}, and studies indicate that there are many causes that lead to this prematurity. According to the Ministry of Health, in 2010, in Brazil, 7.2% of Live Births were pre-term³.

Preterm newborns (PNW) are those born with gestational age (GI) of less than 37 weeks. As they present some structural and functional peculiarities, such as more horizontal ribs and diaphragms, they have an immaturity of the respiratory system, altering its functioning. In addition, they have a reduced amount of fatigue-resistant muscle fibers and narrower airways impairing respiratory mechanics, making them more vulnerable, thus increasing the likelihood of developing complications^{4,5}.

Autopsy investigations have shown that between 32% and 52% of all perinatal deaths are related to respiratory pathologies⁶. Intensive care units (NICUs) have been used as an alternative to increase the survival of these patients, respiratory support, usually Offered by mechanical pulmonary ventilation (MPV), which, although beneficial, is invasive and is directly associated with complications. Therefore, it is important that fast and adequate weaning occurs directly influencing the success of the method⁷⁻⁹.

Furthermore, The success of extubation depends on the patient's ability to spontaneously perform breathing and maintain adequate gas exchange^{10,11}.

When the patient needs to undergo a new intubation within 72 hours after extubation, this is considered a failure. It is only known that reintubated patients are predisposed to develop morbidity and mortality¹².

Fávero et al. (2011) argue that early extubation is a relevant factor in determining the success of the method and may strongly influence pulmonary complications, which arise when patients are unable to make the necessary adjustments.

Due to complications of VMP, mild noninvasive ventilation (NIV) techniques are used as an alternative to ensure ventilation assistance in a less invasive manner, as an effort to minimize lung injury. The use of this method allows the maintenance of greater pressure in the airways, ensuring the recruitment of more alveoli, reducing dead space, improving pulmonary mechanics and increasing gas exchange^{7,13}.

The use of continuous positive airway pressure (CPAP) has been defended as the first choice in PTNBs with some type of respiratory morbidity, and has proven to be an effective way. Besides improving oxygenation, CPAP relieves inspiratory muscle fatigue, avoids alveolar collapse, increases functional residual capacity, and decreases respiratory effort, reducing airway resistance^{8,14,15}.

Another method of NIV to be highlighted is intermittent nasal positive pressure ventilation (nIPPV). In accordance with some studies, this method has shown a lower need for reintubation in relation to CPAP, for it offers inspiratory support intermittently and with a higher positive pressure level than the expiratory one. It has been more frequently used because it reduces thoracoabdominal asynchrony and potentiates the stability of the chest wall, in addition to improving tidal volume, minute volume and decreasing inspiratory effort^{7,9}.

In order to prevent possible complications and respiratory complications and to assist in the recovery of patients presenting with these morbidities, physiotherapy has frequently performed within neonatal intensive care units (NICUs) with the intention of providing hemodynamic stability, preventing perfusion/ventilation changes, Decrease lung resistance and respiratory work, help maintain airways with minimal secretion, avoiding bronchial obstruction and pulmonary hyperinflation, and improve mucociliary clearance and reexpand collaborative areas¹⁶.

Considering the above, the objective of this research was to characterize the profile of extubated PTNBs regarding birth weight, gestational age, classifying, duration of MV and ventilation modality used after extubation, as well as to verify the frequency of physiotherapy and the resources used.

METHODS

This study was approved by the research ethics committee (CEO) of the Santa Casa de Misericórdia School of Sciences of Vitória (HSCMV), registered under the number 1,099,365, characterized as a transversal study with retrospective data collection. A total of 521 records of newborns hospitalized between January 2010 and December 2014 were analyzed, together with 120 charts analyzed by researchers Simoura JB and Tosta AAM, born between January 2008 and December 2009, collected for The study “Study between the use of intermittent positive pressure ventilation and continuous positive airway pressure in preterm newborns after tracheal extubation”, totaling 641 charts analyzed. Of these, 121 files of PTNB admitted to the NICU of HSCMV were selected. The study included all preterm infants with GI \leq 36 weeks and 6 days and birth weight (PN) <2000 g, submitted to CPV and orotracheal intubation (IOT), and extubated within 40 days of life. RNs

that presented congenital anomalies that compromised the cardiorespiratory system; Genetic diseases; Neuromuscular disease that compromised mechanical ventilation; APGAR less than 4 in the fifth minute of life; Intracranial haemorrhage of degrees III and VI; Malformations of the central nervous system; Depression of the central nervous system by drugs were excluded. The data were collected in the company responsible for archiving HSCMV documents and in the hospital in a systematized way, through the form elaborated by the researchers, containing neonatal variables such as date of birth, sex, GI, PN, APGAR, PN / IG adequacy, Time of NPV, mode of NIV post extubation, whether or not failure, failure time, acquired respiratory morbidity, physical therapy, how many sessions and techniques were used.

A descriptive analysis of the data was used in order to consider the frequencies and percentages for qualitative variables and data summary measures as mean, median and standard deviation for the quantitative variables.

RESULTS

Of the sample included in this study, 57.9% of the newborns were male and 42.1% were female. Regarding the birth weight, 51.2% were of low weight (BP), 37.2% very low weight (MBP) and 11.6% extreme low weight (EBP), with a mean weight of 1471.04 Grams, \pm 359.79 grams. Regarding gestational age, 10.8% were classified as borderline, 60.3% as moderate and 28.9% as extreme (table 1), mean gestational age was 31.4 weeks, \pm 2.1 weeks (Table 2). Regarding weight / gestational age adequacy, 88.4% were considered adequate for gestational age (GIA), 11.6% were small for gestational age (GIP) and none were classified as large for gestational age (GIG). When the time of mechanical ventilation was considered, 34.7% were one day or less, 32.2% were

between 2 and 5 days and 33.1% were more than 5 days in the ventilator, with an average time of 4.64 days, \pm 5.67 days. Of the total, 65.3% used nIPPV while 34.7% used CPAP.

Physiotherapy was performed in 84.3% of PTNBs (Table 1). Regarding the techniques used, almost all of the newborns underwent abdominal wall rebalancing, 88.2% underwent motor physical therapy (table 3).

Table 1 – Regarding the RN Profile

CHARACTERISTICS		N	%
SEX	Male	51	42,1
	Female	70	57,9
WEIGHT AT BIRTH	BP	62	51,2
	MBP	45	37,2
	EBP	14	11,6
GESTACIONAL AGE	Extreme	35	28,9
	Limitrofe	13	10,7
	Moderate	73	60,3
ADEQUACY PN/IG	AIG	107	88,4
	PIG	14	11,6
NON-INVASIVE VENTILATION	CPAP	42	34,7
	NIPPV	79	65,3
PHYSIOTHERAPY	NO	19	15,7
	YES	102	84,3

BP: Low weight.

MBP: Very low weight.

EBP: Extreme low weight.

PIG: Small for gestational age.

AIG: Suitable for gestational age.

GIG: Great for gestational age.

CPAP: Positive pressure continuous.

nIPPV: Nasal intermittent positive pressure

Table 2 – Quantitative variables

	Average	Median	Standard deviation
WEIGHT AT BIRTH	1741,04	1525	359,79
GESTATIONAL AGE	31,42	32	2,15
VENTILATION TIME	4,64	3	5,67

Table 3 – Physiotherapy techniques carried out

Techniques	N	%
RTA	100	98,0
AFE	44	43,1
BabyBobath	90	88,2
MHB	46	45,1
Apro. Articular	59	57,8
Stretching	16	15,7

RTA: Rebalancing abdominal thoracic.

AFE: Acceleration of expiratory flow.

MHB: Bronchial hygiene maneuvers.

DISCUSSION

The study showed that most of the analyzed sample consisted of male patients (57.9%), classified as suitable for gestational age (88.4%), with a mean birth weight of $1471.04 \pm 359,79$ grams and mean gestational age of 31.4 ± 2.1 weeks. Venzon (2006), despite showing similar numbers of males (54.9%), mean birth weight and gestational age were lower than those found in this study, being 1034.21 ± 174.19 grams and 28.79 ± 1.96 weeks, respectively. Fávero et al. (2011) also observed that the prevalence of OTI is higher in males (58.3%).

Relating to physiotherapy, the figures demonstrate that a considerable part of the sample (84.3%) performed some technique, and that of these, almost all (98%) had respiratory physiotherapy

CONCLUSION

Of all included in this study, it was noticed that the profile of the intubated infants is male, low birth weight, with a mean weight of 1471.04 grams, moderate prematurity, with a mean of 31.4 weeks, suitable for gestational age, Mean time of VPM of 4.64 days and most uses nIPPV.

The most used technique in physiotherapy performed in a large part of the PTNB was the abdominal reequilibrium.

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