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Immediate care for premature infants in a teaching hospital

Cuidados imediatos aos recém-nascidos pré-termos em um hospital de ensino

Atención inmediata a los recién nacidos prematuros en un hospital universitário

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ABSTRACT

Objective: to describe the immediate care provided to preterm newborns in the delivery room. **Method:** this quantitative, retrospective, observational study was conducted at a teaching hospital. Data collected from 144 medical records of preterm newborns, between January 2019 and January 2020, were submitted to descriptive analysis and the Chi-square test. The study was approved by the research ethics committee. **Results:** immediate care for preterm newborns included the following: 52.1% had their umbilical cord clamped before the first minute, 22.2% had early skin-to-skin contact, 34.7% started breastfeeding within the first hour, and 66.4% underwent airway aspiration in the delivery room. **Conclusion:** early umbilical cord clamping, airway aspiration and inhaled oxygen for clinical stabilization were found to be provided in the delivery room frequently in preterm newborns.

Descriptors: Neonatology; Neonatal Nursing; Infant, Premature; Delivery Rooms.

RESUMO

Objetivo: descrever os cuidados imediatos realizados em recém-nascidos pré-termos na sala de parto. **Método:** estudo observacional, retrospectivo de abordagem quantitativa, realizado em um hospital de ensino. Os dados foram coletados de 144 prontuários de recém-nascidos pré-termos, no período de janeiro de 2019 a janeiro de 2020, e submetidos à análise descritiva e ao teste Qui-quadrado. A pesquisa recebeu aprovação do Comitê de Ética em Pesquisa. **Resultados:** sobre os cuidados imediatos aos recém-nascidos pré-termo, 52,1% tiveram clampeamento do cordão umbilical antes do primeiro minuto, 22,2% realizaram contato pele a pele precoce, 34,7% iniciaram aleitamento materno precoce, 66,4% realizaram aspiração de vias aéreas na sala de parto. **Conclusão:** evidenciou-se que o clampeamento precoce do cordão umbilical, a aspiração de vias aéreas e a utilização de oxigênio inalatório para estabilização clínica são cuidados frequentes realizados nos recém-nascidos pré-termo na sala de parto.

Descritores: Neonatologia; Enfermagem Neonatal; Recém-Nascido Prematuro; Salas de Parto.

RESUMEN

Objetivo: describir la atención inmediata realizada a los recién nacidos prematuros en la sala de partos. **Método:** estudio observacional, retrospectivo, de enfoque cuantitativo, realizado en un hospital universitario. Se colectaron datos de 144 historias clínicas de recién nacidos prematuros, de enero de 2019 a enero de 2020, y se sometieron a análisis descriptivo y prueba de Chi-cuadrado. El estudio fue aprobado por el Comité de Ética en Investigación. **Resultados:** en cuanto a la atención inmediata a los recién nacidos prematuros, el 52,1% tuvo pinzamiento del cordón umbilical antes del primer minuto, el 22,2% tuvo contacto precoz piel a piel, el 34,7% inició la lactancia materna precoz, el 66,4% realizó aspiración de la vía aérea en sala de parto. **Conclusión:** se demostró que el pinzamiento precoz del cordón umbilical, aspiración de las vías respiratorias y el uso de oxígeno inhalado para la estabilización clínica son cuidados frecuentes en los recién nacidos prematuros en la sala de partos.

Descriptores: Neonatología; Enfermería Neonatal; Recien Nacido Prematuro; Salas de parto.

INTRODUCTION

Adaptation of the newborn (NB) to extrauterine life requires specific care measures according to gestational age and weight. Thus, preterm newborns (PTNBs)[1] are at a higher risk of morbidity and mortality since, after birth, they are more susceptible to hypothermia, hypoglycemia, hypotension and respiratory failure, with the consequent adoption of more interventionist approaches[2].

Each year, more than three million NBs evolve to death before the first month of life; of these, one third does not survive their first day of life[3]. In developed countries such the United States, more than half of the neonatal deaths are in PTNBs with less than 32 gestational weeks[4]. In Brazil, prematurity is considered a potentially preventable cause. The country ranks ninth among those with the highest number of PTNBs and presents an 11.2% rate of premature births per year[5]. In addition, among the main causes of mortality in children under one year of age, neonatal complications in premature births before 37 weeks stand out, with 25% in 2016, which shows the need for more effective actions[6].

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Considering that care in the PTNB's first hour of life exerts a direct impact on subsequent complications and hospitalization time in neonatal units, there must be minimal intervention and priority should be given to the essential care measures[2]. In this sense, skin-to-skin contact, temperature maintenance, airway permeability, breastfeeding (BF) stimulation and timely umbilical cord clamping are recommended[1].

Given the complexity and need for neonatal resuscitation, mainly in children under 28 weeks, some practices have been postponed or not performed at all, such as skin-to-skin contact, early breastfeeding and timely cord clamping. However, these care measures can reduce mortality during this period and must be performed early in time whenever possible[2].

In addition to being an instinctive maternal act[1], early skin-to-skin contact in the delivery room increases the mother's temperature, contributing to maintaining the NB's temperature between 36.5°C and 37°C. In addition to that, it is emphasized that heat protection and promotion reduce the consumption of glucose and oxygen in PTNBs, preventing complications such as hypoglycemia, respiratory dysfunction and hypothermia[7,8].

In order to maintain airway permeability in PTNBs, the use of a pillow under their shoulders is proposed in order to keep the neck in slight extension when there are excess secretions in the airways and need for aspiration, observing a maximum pressure of approximately 100 mmHg, with the use of a tracheal tube following the order of the mouth and then the nostrils, gently[9].

Early BF provides intake of colostrum, which is highly nutritious, easy to digest and rich in immunological benefits. The countless benefits of this practice include strengthening the bond, better adaptation to extrauterine life and favoring glycemic, cardiorespiratory and thermal regulation[10]. Immediately after birth, the NB presents a reactivity period, with the innate behavior of sucking on the maternal breast, which stimulates breastfeeding in the first hour of life[11]. This early suction, by increasing the production of oxytocin and prolactin, contributes to stimulating breast milk production and ejection, in addition to reducing the mother's risk of postpartum bleeding[10].

Timely clamping of the umbilical cord, between 30 and 60 seconds after birth is recommended for all NBs, even vigorous PTNBs. However, in cases of resuscitation in the delivery room, there is no consensus[12], although this practice is associated with the reduction of neonatal hypoglycemia, intraventricular hemorrhage, prematurity retinopathy and bronchopulmonary dysplasia[13].

Despite the importance of immediate care for newborns in the delivery room and the recommendations in this care context, many health professionals do not prioritize such care measures, especially in relation to PTNBs, taking them early for evaluation at the resuscitation site[8].

Given this problem and understanding that the adoption of protocols based on the best evidence is fundamental to guide health professionals in the implementation of good practices in neonatal care, this article aims at describing the immediate care provided to preterm newborns in the delivery room.

The relevance of this study lies in the possibility of providing support for the assessment of neonatal care and the planning of professional training, with a view to aligning immediate care with evidence-based recommendations, especially in relation to PTNBs.

METHOD

A retrospective, observational and quantitative study carried out in a teaching hospital from the state of Minas Gerais, Brazil, with the medical records of live births, guided by the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) from the EQUATOR network.

The inclusion criteria adopted were as follows: being a preterm newborn and having been born alive in the aforementioned hospital, from January 2019 to January 2020. It is noted that the medical charts not found or identified were excluded.

Data collection took place from December 2020 to January 2021, starting with the survey of medical records with the institution's Process Management and Information Technology Sector. The data of interest for the research were the variables related to maternal and obstetric characterization (origin, maternal age and type of delivery), as well as variables related to the NB (gender, APGAR score, birth weight, gestational age, twin pregnancy, presence of congenital malformations and classification according to gestational age). Variables related to immediate care were also considered: umbilical cord clamping, skin-to-skin contact, breastfeeding, more frequent complications (respiratory distress/apnea/gasping, heart rate < 100 bpm, meconium-stained amniotic fluid, hypotonia) and procedures for stabilization of the PTNB (orotracheal intubation, Continuous Positive Airway Pressure (CPAP) and inhaled

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oxygen/hood). In relation to hospitalization, the following variables were used: place to where the PTNB was referred, hospitalization time and outcome.

The data from the medical charts were introduced into an Excel® for Windows® spreadsheet by means of double entry for their processing and analysis. Subsequently, the data were exported to the Statistical Package for the Social Science (SPSS) for Windows®, version 23, and a descriptive analysis of the quantitative variables was performed using measures such as mean, standard deviation and minimum and maximum values. The categorical variables were described based on their distributions of absolute and percentage frequencies. Bivariate analysis and Pearson's Chi-square test were performed, considering a p-value < 0.005.

The study complied with the requirements referring to the ethical aspects, respecting the guidelines and regulating norms for research involving human beings. It was approved by the Research Ethics Committee and waiver of the Free and Informed Consent Form was requested, for being a retrospective study and due to infeasibility obtaining it.

RESULTS

A total of 144 medical charts of PTNBs that met the inclusion criteria were located and included. Regarding the maternal and obstetric characteristics, it was found that 52.8% (n=76) of the women were from the macro-region of Uberaba-MG, with a mean maternal age of 27 years old (SD=7.32), minimum of 15 and maximum of 44 years old, and that 50.7% (n=73) sere subjected to cesarean sections.

Regarding the variables related to the PTNBs, it was identified that: 50% (n=77) were female; 79.8% (n=111) presented good vitality in the first minute of life and 92.9% (n=131) in the fifth minute of life; they had a mean birth weight of 2,295 g (SD=658), minimum of 495 g and maximum of 4,120 g; 91.6% (n=131) were appropriate for their gestational age (AGA), 4.9% (n=7) were small for their gestational age (SGA) and 3.5% (n=5) were large for their gestational age (LGA); 45.1% (n=65) had between 36 weeks and 36 weeks and 6 days of gestational age; 16.7% (n=24) were twins; and 5.6% (n=8) presented congenital malformations. According to the classification of gestational age, 4.2% (n=6) of the PTNBs were extremely preterm, 10.4% (n=15) were very preterm, 6.9% (n=10) were moderately preterm and 78.5% (n=113) were late preterm.

Regarding the care provided during the first hour of life, it was verified that the umbilical cord clamping time was less than a minute in 52.1% (n=75) of the PTNBs; 1.4% (n=2) were dried and warmed close to the mother; 22.2% (n=32) had continuous early skin-to-skin contact; and early BF occurred in 34.7% (n=50).

Respiratory distress was the most frequent complication, present in 47.9% (n=69) of the PTNBs, followed by hypotonia, with 9.2% (n=42), and heart rate below 100 bpm, with 9% (n=13). Table 1 describes the procedures performed to stabilize the PTNBs.

TABLE 1: Distribution of the procedures performed on the PTNBs during their first hour of life (n=144). Uberaba, MG, Brazil, 2019.

Variables	n	%
Airway aspiration	93	64.6
Gastric suction	31	21.5
Inhaled O_2	37	25.7
OTI	18	12.5
CPAP	4	2.8

Source: Prepared by the author, 2021.
Key: OTI: Orotracheal Intubation.

Airway aspiration was identified in 64.6% (n=93) of the PTNBs and the need for oxygen inhalation therapy was identified in 25.7% (n=37).

With regard to hospitalization of the PTNBs, after the care and procedures performed in the delivery room, 67.9% (n=95) of the PTNBs were referred to Rooming-In (RI), 15% (n=21) to the Intermediate Care Unit (IMCU), 12.1% (n=17) to the Neonatal Intensive Care Unit (NICU) and 5% (n=7) to the Children's Emergency Room (CER). The mean hospitalization time was 15 days (SD=26.79), with a minimum of zero and a maximum of 184 days. Regarding the outcome, 93.7% (n=134) were discharged and 9.3% (n=9) evolved to death.

Table 2 presents the results of the inferential analyses.

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TABLE 2: Analysis of the umbilical cord clamping time variable and classification of gestational age, according to the procedures performed on the PTNBs in the delivery room (n = 144). Uberaba, MG, Brazil, 2021.

Variables	Orotracheal Intubation			
	Yes n (%)	No n (%)	Total n (%)	*p-value (< 0.005)
Umbilical cord clamping time				
Less than a minute	17 (22.7)	58 (77.3)	75 (100)	*p < 0.001*
Between one and three minutes	1 (1.7)	59 (98.3)	60 (100)	*p < 0.001*
More than three minutes	0	9 (100)	9 (100)	*p < 0.001*
Classification of gestational age				
Extremely preterm - Less than 28 weeks	6 (100)	0	6 (100)	*p < 0.001*
Very preterm - From 28 and 31 weeks	10 (66.7)	5 (33.3)	15 (100)	*p < 0.001*
Moderately preterm - From 32 to 33 weeks	1 (10)	9 (90)	10 (100)	*p < 0.001*
Late preterm - From 34 to 36 weeks and 6 days	1 (0.9)	112 (99.1)	113 (100)	*p < 0.001*
Total	**18 (12.5)**	**126 (87.5)**	**144 (100)**	

Source: The authors, 2021.

After investigating the association between the data related to the umbilical cord clamping time and the procedures performed in the delivery room, through bivariate analysis and the Chi-square test and considering a p-value < 0.005, it was identified that, of the PTNBs who underwent orotracheal intubation (OTI), 22.7% (n=17) had the umbilical cord clamped in less than a minute and 66.7% (n=10) were very preterm NBs.

DISCUSSION

Caring for the health of NBs is of fundamental importance for reducing infant mortality, promoting quality of life and restoring health and well-being, being one of the priorities in children's health care, ensuring adequate growth and development in the physical, emotional and social aspects[14,15].

Immediate care must be prioritized with the intention of effectively promoting quality of life in these PTNBs[2]. In this study, it was noticed that 52.1% (n=75) of the PTNBs were subjected to early clamping of the umbilical cord, which could be related to the procedures necessary for clinical stabilization. However, only 12.5% (n=144) required OTI, a number consistent with a correlated study on resuscitation in the delivery room, where 12.2% of the PTNBs underwent the same procedure[16].

In PTNBs, the practice of timely clamping is recommended from 30 to 60 seconds after birth, being an immediate care measure that is associated with the reduction of mortality, intraventricular hemorrhage and red blood cell transfusions, since postponement of cord clamping favors blood pressure stability and contributes to a smoother cardiorespiratory transition[17-19]. However, there is still no consensus regarding the need for resuscitation in the delivery room[12].

In relation to drying of the NB, it is recommended that this practice take place on the mother's chest, followed by the insertion of a double cotton cap, in order to avoid heat loss by evaporation during the other immediate care measures, such as skin-to-skin contact and early BF in the first half hour of life[9].

On the other hand, in cases of difficulty at the beginning of breathing or poor muscle tone, the use of a radiant heat source concomitant with the resuscitation maneuvers is recommended, with a thermal mattress or polyurethane bag, without prior drying of the NB[9]. This fact was observed as only 1.4% of the PTNBs were dried on the mother's lap, which can be justified by the clinical complications that contraindicate this practice.

Although early and uninterrupted skin-to-skin contact after birth is recommended by the World Health Organization (WHO), the results of this study show the low prevalence of this practice among PTNBs (22.2%), as identified in another survey, which found a rate of 17.5%. These data suggest the existence of obstacles to early skin-to-skin contact, which can be related to unfavorable maternal and/or neonatal conditions, as well as to the need for transfer[20,21].

In the practice, it is observed that skin-to-skin contact is not prioritized as an immediate care measure for PTNBs, even when they do not need immediate transfer to the ICU, do not present infection or respiratory distress and have an indication for referral to Rooming-In[8]. Corroborating this, among preterm infants not subjected to neonatal resuscitation or without the need for other interventions in the delivery room, only 14.3% had skin-to-skin contact immediately after birth[22].

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With regard to early BF, the percentage of PTNBs (34.7%) is close to the one found in a study with NBs from maternity hospitals in *Rede Cegonha* in the Southeast region (31%) and in another survey in the state of Rio de Janeiro with the same population (28%). However, a research study conducted with 22 PTNBs in a Baby-Friendly Hospital verified that none of them were breastfeed during the first hour of life[22-24].

Although this immediate care measure is associated with a lower risk of sepsis, necrotizing enterocolitis and prematurity retinopathy, better neuropsychomotor development and a reduction in readmission rates and hospitalization time, it is common for preterm infants to experience difficulties in early BF due to clinical conditions of the mother/baby binomial, unsatisfactory sucking reflex and immaturity at birth[25,26]. On the other hand, it is known that the implementation of this practice is faced with divergences in professional courses of action and the high demand for care combined with insufficient human resources[27].

Among the factors limiting the implementation of these immediate care measures, respiratory distress was the predominant complication in this research, found in 47.9% of the PTNBs. However, this percentage differs from the findings of other studies, which revealed an index of 21.3% related to this complication[28] and evidenced pulmonary immaturity and gestational age as the main factors[13].

Regarding hypotonia at birth, this complication was associated with difficulties to encourage early BF, verified in 9.2% of the PTNBs. It is emphasized that this percentage is similar to that found in a research study on clinical aspects of PTNBs at birth, in which 5.8% of the population with the same characteristic presented hypotonia[29].

Given the need to stabilize the PTNB, there was a significant percentage of airway aspiration among PTNBs in the delivery room, corroborating other studies[20,30,31]. Based on high-quality evidence, the WHO recommends that, in NBs with clear amniotic fluid and spontaneous breathing after birth, nasopharyngeal and oropharyngeal suction should not be performed[32]. In the practice, it is verified that procedures lacking scientific support about their benefits for the PTNBs are significantly adhered to by perinatal assistance professionals[20].

In this context, it was observed that inhaled oxygen in the delivery room was used in 25.7% of the PTNBs in this study, corroborating data from another study, in which 21.7% needed the same therapy[33]. It is emphasized that this procedure is a supportive measure to assist in the smooth transition of the gas exchange system from the placenta to the lungs, considering the propensity of PTNBs to having respiratory difficulties immediately after birth[9,13].

In addition, it was verified that OTI and early clamping were the most frequent immediate care measures in very preterm NBs, with 66.7% (n=10) and 22.7% (n=17), respectively. This correlation was also found in other studies[7,12,19], which also show OTI as a limitation to implementing other recommended immediate care measures in the face of instability and the need to transfer PTNBs to the NICU[8].

Regarding the outcome, it is noticed that 67.9% of the PTNBs were referred to RI, showing good clinical stability in most of the cases of moderate to late prematurity. In PTNBs with this profile, it is observed that intensive care measures are only required in case of complications during delivery[16].

Regarding hospitalization time, this study found a mean of 15 days, longer than that shown in a survey with moderately and late PTNB, where the prevalent hospitalization time was 1-3 days (39.7%)[16]. Furthermore, considering that 93.7% of the studied population was discharged from the hospital, it is noted that the percentage of mortality in the institution is low (9.3%), a result similar to the 7.8% prevalence found in a correlated study[28].

The findings of this research are important for the field of Nursing and Neonatal Health Care, since studies mapping immediate care of newborns in the delivery room enable the identification of gaps in neonatal care and offer support for planning permanent education actions and the implementation of good practices, especially in relation to PTNBs.

Study limitations

The study limitations include the quality of the records and the retrospective design, due to the restriction of previously recorded documentation, which made it impossible to observe the object studied in real time.

CONCLUSION

As for the variables related to the PTNBs, there was no predominance in relation to gender, most of them presented weight and height values compatible with AGA, good vitality at birth in the first and fifth minutes, and were mostly classified as late preterm NBs in terms of gestational age.

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The practice of early clamping of the umbilical cord, frequent airway aspiration after birth and the need to install inhaled O_2 for clinical stabilization were evidenced among the immediate care measures. In the PTNBs subjected to OTI, occurrence was greater among very preterm NBs and with less than a minute of umbilical cord clamping time. The complication that stood out was respiratory distress; most of the PTNBs were referred to hospitalization in Rooming-In and were discharged from the hospital.

Thus, it is recommended to plan and implement permanent education actions for the practitioners working in the delivery room, promoting humanized practices and based on scientific evidence, especially for this being a teaching hospital.

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