12 - CHARACTERIZATION OF NEWBORN LOW AND VERY LOW WEIGHT NASAL CPAP IN A NEONATAL INTENSIVE CARE UNIT WEST PARANÁ

REYWERSON CAVALHEIRO
ZILDAMARA BEZERRA LIMA
GLEICE FERNANDA COSTA PINTO GABRIEL
MARCOS ANTONIO DA SILVA CRISTOVAM
NELSON OSSAMU OSAKU
UNIOESTE, Cascavel, Paraná, Brasil
nelsonosaku@yahoo.com.br

INTRODUCTION

Newborns (RN's) 37 to 41 weeks of gestation and with more than 41 weeks are considered, respectively, "the term" and "post-term", calculated from the 1st day of last menstrual cycle (Hertz and DIN , 1998; SEGRE, Armellini and Maron 1995). The RN's premature (preterm), following criteria of the World Health Organization (WHO), can be subdivided into three groups according to gestational age: extremely preterm infants (26-30 6 / 7 weeks), moderately preterm (31 -35 6 / 7 weeks) and borderline preterm infants, 36 - 36 6 / 7 weeks (MARCONDES, VAZ and RAMOS 2003).

The incidence of preterm birth varies according to country or region, related mainly to the socioeconomic conditions of the population. In developed countries the incidence of prematurity is 6% to 8%. In Latin America the incidence varies from 10% to 43%. In Brazil, Benzecry Oliveira, Lemgruber (2000) show an incidence of 11%. Costa and Gotlieb (1998), in a multicenter study comprising the cities of São Paulo, the observed incidence of 6.6% to 10.4%.

Considering the admissions in neonatal intensive care units, the percentage of preterm births is approximately 50%. Giglio, Lamaunier and Neto et al. (2005) indicated the percentage of 7.2% in Goiânia (sample of 226 newborns) and the criterion of weight, 55.9% (113 cases) had a weight less than 2500g. This is comparable to a multicenter study in neonatal units in São Paulo, coordinated by Kilsztajn, Suguhara and Rossbach (2003), which indicated a 57% incidence of low birthweight infants.

The RN's are especially suffering from premature lung disorders (neonatal asphyxia, transient tachypnea, hyaline membrane disease, meconium aspiration syndrome, among others) and is a major cause of morbidity and mortality. Among the many current strategies for the treatment of neonates, continuous positive airway pressure (CPAP) has been a widely used tool to be an effective way and noninvasive ventilation for patients with spontaneous breathing (LIMA, FREIRE and ANDRADE et al., 2004 and PAUL HENDERSON-SMART AND DAVIS 2005).

A decade ago, Nelson (2000) proclaimed the CPAP as one of the ten most significant discoveries in the neonatology due to an immediate and significant improvement in the prognosis of children with respiratory distress syndrome. The positive airway pressure can be used in newborn's blood gas disturbances that have signs of respiratory distress, and postextubation cases, helping to increase the oxygen pressure (pO2), less so orotracheal reintubation (De PAOLI et al., 2003).

Another mode of ventilatory support, intubation (OTI) with use of invasive mechanical ventilation (IMV) continues with its precise: the need for oxygen concentration - fraction of inspired O2 (FIO2) greater than 60%, severe respiratory distress and not response to treatment with CPAP. In the delivery room, extreme preterm infants usually require VMI at birth, the primary deficiency of surfactant and present physical and anatomical characteristics that prevent them from maintaining adequate spontaneous ventilation (SARMENTO, 2007).

Over time, the development of new approaches for assisted ventilation (VA) has increased the survival rate of RN's over 50% in preterm (PIVA, GARCIA and SANTANA et al. 1998; LIMA, FREIRE and ANDRADE et al., 2004).

The objective of this study was to analyze the characteristics of newborns of low weight and very low birth weight in use of CPAP in the NICU of HUOP. Having specific objectives are to analyze age at start CPAP, clinical and laboratory criteria for the indication of CPAP, duration of use, mode of ventilatory support after bankruptcy, time for new ventilation, new laboratory criteria of ventilation after failure and number of cycles used.

METHODOLOGY

This study is a quantitative retrospective and exploratory descriptive type. As data collection instrument used was a form created by the researchers. The data collected from newborns of low weight, very low birth weight and extremely low birth weight were related to gestational age, birth weight, reason for hospitalization, data from invasive mechanical ventilation and noninvasive ventilation time, it showed signs of respiratory failure. Data were tabulated and analyzed with Microsoft Excel 2000 software.

The research selected medical records of 202 newborn who were hospitalized in the NICU of the University Hospital of the West of Paraná, in the city of Cascavel-PR during the period 1 June 2008 to May 31, 2009. This sample consists of all newborns of VLBW and LBW groups, and who used CPAP during neonatal ICU stay. The selected medical records were excluded newborns of LBW and VLBW groups who: died during MV; underwent VM that required surgery, had congenital diseases; had information typical of genetic disease, and those who were suspected of disease by mistake innate metabolism. Of the total of 202 selected medical records, only 23 newborns met the requirements of research, since only these had been submitted to the application of nasal CPAP at some point in their hospitalization.

This study was approved by the Ethics and Research of the State University of West Paraná - UNIOESTE.

RESULTS AND DISCUSSION

Among the 202 medical records of RN's, hospitalized from June 1, 2008 to May 31, 2009, at the discretion of weeks of pregnancy by the method Capurro, the premature infants were the most admitted 100 newborns, and post 12 neonates were 90 RN'se RN'sa term.

The number of premature infants hospitalized in the NICU of HUOP in the study period of 12 months (49% among 202 cases) is very close to the study of Giglio, Lamaunier and Neto et al (2005) made the city of Goiânia (47, 2%), with a population of 1 million inhabitants (Rattlesnake, 297 000 inhabitants).

The premature infants hospitalized in the period were mostly moderate prematurity group of 64 inpatients. The RN's were borderline and 18 were 18 RN's end. These results are similar to the study of Rego and Martinez (2000), which when considering the gestational age of 96 newborns with gestational age from 31 to 34 weeks obtained an incidence of 60% of the study group.

The causes of hospitalization in the neonatal unit in descending order were: prematurity (57.9%), transient tachypnea

(24.8%), other (21.8%), neonatal asphyxia (16.8%), hyaline membrane syndrome (5.9%), heart (3.5%), meconium aspiration syndrome (3%), obtaining different results from a study by Rego and Martinez (2000), where the newborns hospitalized in the NICU had tachypnea transient newborn with 38% of cases, followed by hyaline membrane syndrome with 33%.

Those infants who were treated with nasal CPAP were located in three groups of preterm infants, being more frequent (39%) in group PN Far, followed by PT RN moderate (34%), and infants with borderline PT (26, 1%), indicating that preterm infants are capable of receiving the application of nasal CPAP. What is according to the survey conducted by Morley and Davis (2004) in Australia and New Zealand.

Of the RN's of the 1000g to 2499g underwent nasal CPAP, most were after invasive mechanical ventilation. RN's 13 underwent nasal CPAP after VMI, 08 RN's needed nasal CPAP and 02 RN's unique nasal CPAP used prior to VMI.

Of the 23 infants who underwent CPAP, 35% progressed without the need for invasive mechanical ventilation and 25% (2 cases) of this sample was the failure of the technique, resorting to invasive mechanical ventilation, and the remaining 40% received nasal CPAP after invasive mechanical ventilation.

The result approaches the study of Sandri, Ancora and Lanzoni et al. (2004), expect for low number in the series, with 30% rate of failure in the exclusive use of CPAP. It also highlights the fact that this study did not raise the time (hours) after birth the installation of this noninvasive technique.RN's groups included in the study, 12 (52.2%) were VLBW infants, 11 (47.8% were LBW infants. In the LBW group the most received exclusive nasal CPAP.

Of the neonates who received the exclusive application of nasal CPAP, prior to installation of this type, the frequency ranged from 45 to 58 breaths per minute (average 55 pm) and oxygen saturation by pulse oximetry indicated, minimum 84 and maximum of 90% % (average 88%).

The small number of cases of infants who underwent nasal CPAP, and failure to record clinical data indicative for the installation of this noninvasive technique (only eight records indicated the RR and SpO2, just before the start of nasal CPAP) does not allow definitive conclusions. We should note, however, that in 34.8%, an average of 55 breaths per minute is in agreement with the 48 to 76 incursions from the study of Rego and Martinez (2000). The hipossaturação (mean 88%), recorded in this sample of 8 cases, too, agree with Sarmento (2007).

In addition to the eight records with records of FR and SpO2, only two, was no record of clinical signs of respiratory failure such as tachypnea, intercostal runs, grunting, and cyanosis. The lack of routine laboratory tests for blood gases in the neonatal unit, especially in relation to time after installation of non-invasive modality, undermined the conclusions of time to improve gas exchange (and comparisons with the study of Rego and Martinez (2000).

The period of application of CPAP in VLBW and LBW group was longer in the period from 144 to 168 hours, observed in both groups, and cases were more frequent between 36 and 48 hours. In a study by Rego and Martinez (2000), in evaluating the application of nasal CPAP in 96 newborns of low weight and very low birth weight had an average of 60 hours of application of nasal CPAP, and its application over time extended from 120 to 190 hours.

The time of application of CPAP ranged from 6 to 144 hours. Of these, five cases (21.7%), it was applied during the period from 36 to 48 hours. The literature shows great variability in time spent on nasal CPAP, with averages between 48h and 124h (Wung, 2005, Kamp and RINGSTED, 2008).

Of the 23 cases studied, only 10 records were found records of some of the signs of respiratory failure such as tachypnea, retractions, cyanosis and groaning.

CONSIDERATIONS

A sampling of newborns with nasal CPAP included in the study is small, it is not possible to provide definitive conclusions, but those who received the application of this noninvasive method were in line with the recommendations in the scientific literature.

The expansion of the sample through new studies, and enhance the data collection instrument, such as adding a field to record the time (in hours) of life by applying nasal CPAP may improve the discussion and the conclusions of the subject nCPAP in infants of low and very low birth weight neonatal ICU HUOP.

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ADRESS: NELSON OSSAMU OSAKU
UNIOESTE/ Colegiado de Medicina
Rua Universitária, 2069. Bairro: Jardim Universitário
CEP 85819-110, Cascavel – Paraná.
Phone: (45) 3220-3000.
E-mail:nelsonosaku@yahoo.com.br.

CHARACTERIZATION OF NEWBORN LOW AND VERY LOW WEIGHT NASAL CPAP IN A NEONATAL INTENSIVE CARE UNIT WEST PARANÁ

In Brazil the incidence of premature newborns lies at around 11%, and the population of the neonatal ICU is close to 50%. Newborns (RN's) are especially suffering from lung diseases and is a major cause of morbidity and mortality. Among the many current strategies for the treatment of neonates, continuous positive airway with nasal prongs (nasal CPAP) has been used for a ventilation mode to be effective and noninvasive, and low cost. The study on the prevalence of nasal CPAP in newborn's low and very low birth weight neonatal ICU HUOP covered a period of 12 months, 23 RN's were selected that met the criteria for inclusion and exclusion. Most infants underwent CPAP occurred after a period of invasive mechanical ventilation. We analyzed the clinical and laboratory records at the time of initiation and discontinuation of therapy. Most infants received application of the technique of CPAP from 36 to 48 hours. It was concluded that the percentage of RN's who have been successful (35%) and those considered as failure (25%) therapy, progressing to invasive mechanical ventilation.

KEY WORDS: Continuous Positive Airway, ventilation, prematurity.

CARACTÉRISATION DE FAIBLE POIDS ET TRES FAIBLE NÉ POUR UTILISATION DANS UN USIN PPC NASALE DE L'OUEST DU PARANA

Au Brésil, l'incidence des nouveau-nés prématurés est autour de 11%, et la population de l'unité de soins intensifs néonatals est proche de 50%. Nouveau-nés (RN) sont particulièrement souffrant de maladies pulmonaires et est une cause majeure de morbidité et de mortalité. Parmi les nombreuses stratégies actuelles pour le traitement des nouveau-nés, continue par voie positive avec canule nasale (PPC nasale) a été utilisé pour un mode de ventilation doit être efficace et non invasive, et faible coût. L'étude sur la prévalence de la CPAP nasale du nouveau-né faible et très faible poids de naissance néonatal HUOP réanimation couvrait une période de 12 mois, 23 RN ont été sélectionnés qui répondaient aux critères d'inclusion et d'exclusion. La plupart des nourrissons ont subi PPC a eu lieu après une période de ventilation mécanique invasive. Nous avons analysé les dossiers cliniques et de laboratoire au moment de l'initiation et l'arrêt du traitement. La plupart des nourrissons ont reçu application de la technique de la CPAP de 36 à 48 heures. Il a été conclu que le pourcentage de RN qui ont été couronnées de succès (35%) et ceux considérés comme un échec (25%) thérapie, progresse à la ventilation mécanique invasive

MOTS CLÉS: Continuous Positive Airway, la ventilation, la prématurité.

CARACTERIZACIÓN DE PESO DEL RECIÉN NACIDO BAJO Y MUY BAJO PARA USO EN UN UCIN CPAP NASAL DEL OESTE DE PARANÁ

En Brasil, la incidencia de recién nacidos prematuros se sitúa en torno al 11%, y la población de la UCI neonatal es cercana al 50%. Los recién nacidos (RN) son especialmente afectadas por enfermedades de pulmón y es una causa importante de morbilidad y mortalidad. Entre las muchas estrategias actuales para el tratamiento de los recién nacidos, la vía aérea positiva continua con cánula nasal (CPAP nasal) se ha utilizado para un modo de ventilación para ser eficaz y no invasivo y de bajo costo. El estudio sobre la prevalencia de la CPAP nasal en el recién nacido de bajo y muy bajo peso al nacer neonatal HUOP UCI abarcó un período de 12 meses, 23 RN fueron seleccionados que cumplieron con los criterios de inclusión y exclusión. La mayoría de los niños sometidos a CPAP después de un período de ventilación mecánica invasiva. Se analizaron los expedientes clínicos y de laboratorio en el momento de inicio y la interrupción del tratamiento. La mayoría de los recién nacidos recibieron la aplicación de la técnica de la CPAP 36 a 48 horas. Se concluyó que el porcentaje de RN que han tenido éxito (35%) y aquellos considerados base de fracasos (25%), la terapia, avanza a la ventilación mecánica invasiva.

PALABRAS CLAVE: vía aérea positiva continua, la ventilación, la prematuridad.

CARACTERIZAÇÃO DE RECÉM-NASCIDOS DE BAIXO E MUITO BAIXO PESO EM USO DE CPAP NASAL EM UMA UTI NEONATAL DO OESTE DO PARANÁ

No Brasil a incidência de recém-nascidos prematuros situa-se em torno de 11%, e na população das UTI´s neonatais é próximo dos 50%. Os recém-nascidos (RN´s) são especialmente acometidos de doenças pulmonares, sendo uma das principais causas de morbimortalidade. Dentre as várias estratégias atuais para o tratamento destes neonatos, a pressão positiva contínua nas vias aéreas com pronga nasal (CPAP nasal) tem sido utilizada por ser um modo ventilatório eficaz e não invasivo, além do baixo custo. O estudo sobre a prevalência de CPAP nasal em RN´s de baixo e muito baixo peso na UTI neonatal do HUOP abrangeu um período de 12 meses, sendo selecionados 23 RN´s que atendiam os critérios de inclusão e exclusão. A grande maioria dos RN submetidos à CPAP ocorreu após um período de ventilação mecânica invasiva. Foram analisados os registros clínicos e laboratoriais, no momento do início e suspensão da terapêutica. A maior parte dos RN recebeu aplicação da técnica de CPAP entre 36 a 48 horas. Concluiu-se que o percentual dos RN´s que tiveram sucesso (35%) e aqueles considerados como falha (25%) terapêutica, evoluindo para ventilação mecânica invasiva.

PALAVRAS-CHAVE: Pressão positiva contínua nas vias aéreas, ventilação mecânica, prematuridade.