به نام خدا

شرح خدمات و سوابق فعالیت های علمی و اجرایی(CV)

دکتر علیرضا صادق نیا

1. ورود در سال 64 و فارغ التحصیل در سال 71 از دانشگاه مشهد
2. ورود در سال 81 و فارغ التحصیل در سال 84 در رشته کودکان از دانشگاه تبریز
3. ورود در سال 86 و فارغ اتحصیل در سال 88 در رشته نوزادان از دانشگاه اصفهان

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Original Article

Early versus delayed initiation of nasal continuous positive airway pressure for treatment of respiratory distress syndrome in premature newborns: A randomized clinical trial

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Abstract

Background: This prospective study was performed to identify whether the early use of nasal continuous positive airway pressure (n CPAP) would reduce the rate of endotracheal intubation, mechanical ventilation and surfactant administration.

Materials and Methods: This study was conducted from June 2009 to September 2010 in the Shahid Beheshti University Hospital, Isfahan-Iran. A total of 72 preterm infants with 25-30 weeks gestation who needed respiratory support at 5 min after birth entered the study. Infants were randomly assigned to the very early CPAP (initiated 5 min after birth) or to the late CPAP (initiated 30 min after birth) treatment groups. The primary outcomes were need for intubation and mechanical ventilation during the first 48 h after birth and secondary outcomes were death, pneumothorax, intraventricular hemorrhage, duration of mechanical ventilation and bronchopulmonary dysplasia.

Results: There were no significant differences between the two groups with regard to mortality rate, bronchopulmonary dysplasia and patent ductus arteriosus. The need for surfactant administration was significantly reduced in the early CPAP group ($P = 0.04$). Infants in the early CPAP group less frequently required intubation and mechanical ventilation.

Conclusions: Early n CPAP is more effective than late n CPAP for the treatment of respiratory distress syndrome. In addition, the early use of n CPAP would reduce the need for some invasive procedures such as intubation and mechanical ventilation.

Key Words: Continuous positive airway pressure, premature infant, respiratory distress syndrome

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INTRODUCTION

Neonatal respiratory distress syndrome (RDS) is an important cause of morbidity and mortality in premature infants. The primary cause of neonatal RDS is surfactant defi which leads to decrease in lung compliance and thereby hypoventilation and ventilation perfusion mismatch.[1,2]

In the previous decades, mechanical ventilation was the standard management of RDS in very premature

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Original Article

Analysis and comparison of the effects of N-BiPAP and Bubble-CPAP in treatment of preterm newborns with the weight of below 1500 grams affiliated with respiratory distress syndrome: A randomised clinical trial

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Abstract

Background: Nowadays, establishment of nCPAP and surfactant administration is considered to be the first level of intervention for newborns engaged in the process of Respiratory Distress Syndrome (RDS). In order to decrease the side effects of the nCPAP management placed in noninvasive-non-cycled respiratory support. Noninvasive-cycled respiratory support mechanism have been developed such as N-BiPAP. Therefore, we compared N-BiPAP with Bubble-CPAP in a clinical trial.

Materials and Methods: This research was done as ~~an~~ on newborns weighing less than 1500 grams affiliated with RDS. A3 The total number of newborns was 70. Newborns were divided into two groups with the sample size of 35 patients in each, according to odd and even document numbers. One group was treated with N-BiPAP and the other with Bubble-CPAP. Patients were compared according to the length of treatment with noninvasive respiratory support, length of oxygen intake, number of surfactant doses administered, need for invasive mechanical ventilation, apnea, patent ductus arteriosus (PDA), chronic lung disease, intraventricular hemorrhage, pneumothorax, and death. Data was recorded and compared.

Results: The average duration for noninvasive respiratory support and the average time of need to complementary oxygen was not significantly different in both groups (P value > 0.05). Need for invasive ventilation, also chronic lung disease, intraventricular hemorrhage (IVH), pneumothorax, need for the next dose of surfactant, and the death rate did also have no meaningful difference. (P value > 0.05).

Conclusion: In this research N-BiPAP did not show any obvious clinical preference over the Bubble-CPAP in treatment of newborns weighing less than 1500 grams and affiliated with RDS.

Key Words: Bubble-CPAP, N-BiPAP, preterm newborn, respiratory distress syndrome

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INTRODUCTION

Diseases related to prematurity were considered to be the cause of 17% of death in 2003 in United States and it is estimated that almost half (49%) of this rate happened in newborns less than 1,000 grams, A4 with respiratory distress syndrome (RDS) and bronchopulmonary dysplasia (BPD) to be the most

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Original Article

A comparison of two interventions for HHHFNC in preterm infants weighing 1,000 to 1,500 g in the recovery period of newborn RDS

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Abstract

Background: Nasal cannula, beside administering low-flow therapy, showed the capability for the administration of continuous positive airway pressure (CPAP) through high-flow nasal cannula (HFNC). Meeting specific physical criteria of 100% relative humidity (RH) and temperature of 37°C are the basic interventional requirements to administer oxygen for the newborns through a nasal cannula. Recently, two systems, MR850 and PMH7000, received the Food and Drug Administration (FDA) approval to administer heated, humidified HFNC (HHHFNC). These systems are evaluated in this study based on their humidifying and heating capabilities.

Materials and Methods: This study was done as an RCT on newborns weighing 1,000 to 1,500 g recovering from respiratory distress syndrome (RDS) while nCPAP was administered at CDP = 4 cmH_2O, Fio_2<30%. Patients were randomized to two groups of 35 receiving HHHFNC after treatment with nCPAP, with one group using MR850 humidifier and the other PMH7000. The patients were compared according to the duration of HHHFNC administration, repeated need for nCPAP respiratory support, the need for invasive ventilation, apnea, chronic lung disease (CLD), nasal trauma, RH, and temperature of the gases.

Results: The average time of support with HHHNFC did not show any significant difference in the two groups. There was no significant difference between the groups in the need for nCPAP, invasive ventilation, apnea, nasal trauma, and CLD. The difference in the levels of average temperature and humidity was significant (*P* value <0.001).

Conclusion: Although the records of temperature and RH in the PMH7000 system was lower than the records from the MR850 system, no clinical priority was observed for respiratory support with HHHNFC in the two systems.

Key Words: HHHFNC, MR850, PMH7000, respiratory distress syndrome

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INTRODUCTION

Diseases related to prematurity were the cause of death for 17% of overall newborns in the United States in 2003, whereas respiratory distress syndrome (RDS) and bronchopulmonary dysplasia (BPD) are the most common among the diseases resulting in death in this group of newborns. Despite the increasing number of

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Original Article

A comparison of surfactant administration through i-gel and ET-tube in the treatment of respiratory distress syndrome in newborns weighing more than 2000 grams

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Abstract

Background: Surfactant administration together with nasal Continuous Positive Airway Pressure (nCPAP) administration is considered to be the basis for Newborn's Respiratory Distress Syndrome (RDS) management. This study evaluated the method of directing the surfactant to the lungs in newborns affiliated with RDS through i-gel (i-gel surfactant administration/i-gelSA) compared to the standard care INSURE method, in a clinical trial.

Materials and Methods: This randomized control trial (RCT) was done on newborns weighing ≥2000 g, with RDS, while being supported with Bubble-CPAP. Newborns, which required $FiO_2 \geq 0.3$ under Continuous Distending Pressure (CDP) ≥5 cm H_2O for more than 30 minutes to maintain SpO_2 in the range of 89 - 95%, were given 100 mg/kg of Survanta. In the interventional group or the i-gelSA (i-gel Surfactant Administration) group, 35 newborns experienced surfactant administration with i-gel and 35 newborns in the control or INSURE group. The average a/APO_2 before and after surfactant administration, repeated need for surfactant administration, average nCPAP duration, need for invasive mechanical ventilation, pneumothorax, and the average duration of hospitalization in the Neonatal Intensive Care Unit (NICU) were compared.

Results: Although the average a/APO_2 showed no significant difference before the procedure; in the i-gelSA group, this average was meaningfully higher after the administration of the surfactant ($P = 0.001$). The other factors showed no significant difference.

Conclusion: According to the results of this study, the surfactant administration using i-gel was more successful in oxygenation improvement than the INSURE method, and the i-gel method could even be promoted to the standard care position. However, more research is needed in this area.

Key words: i-gel, INSURE, nCPAP, newborns respiratory distress syndrome

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INTRODUCTION

A newborn's RDS is one of the most common reasons for morbidity in premature newborns. Prevalence of this disease decreases as the gestational age increases. In most cases, diagnosis occurs based on the findings from clinical and radiographic trials. Classic clinical demonstrations of the disease include grunting, intercostal and subcostal

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A Comparison Between the Effect of Fluorescent Lamps and Quartz Halogen Incandescent Filament Lamps on the Treatment of Hyperbilirobinemia in Newborns with the Gestational Age of 35 Weeks or More

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ABSTRACT

Background: Icter is the most prevalent disease in newborns. Although most of the newborns affiliated with this seem healthy in other aspects, there is always a fear for toxic complication of indirect hyperbilirobinemia in the central nervous system. If the level of indirect Bilirobin increases in the plasma to a level, which denotes the probability of danger, phototherapy must be carried out immediately as the basic intervention. Nowadays phototherapy is the method of decreasing (or avoidance of increase) of total serum bilirobin (TSB) and it is also used widely in neonatal health care centers according to the availably of equipment, but without any defined standard. These light sources utilize different technologies designed to create light beams with the highest efficacy and less complications. In this study, two light sources, quarts halogen incandescent filament lamp (QHIFL) and fluorescent lamp (FL) are compared with each other to find out which method is more useful and efficient.

Methods: This study is a randomized controlled trial done on 25 newborns with gestational age of 35 weeks or more, with newborn's icter in the 1st week after birth, at Isfahan Behesti Hospital, February 2012 to March 2013. A group of these newborns was treated with FL and the other with QHIFL and they all were controlled and tested according to their level of TSB at the beginning of phototherapy, at 8th, 12th, and 24th h of treatment and at discharge. The data from the study was analyzed by IBM SPSS Statistics Version 21.

Results: According to the findings, the level of TSB before and 8 h after the intervention had no significant difference among the groups. However, at 16th and 24th h of treatment, the TSB level was lower in the FL group and this difference was meaningful ($P = 0.002$ and $P = 0.013$ respectively). Furthermore the duration of the treatment was significantly shorter in FL group meaningfully ($P = 0.047$).

Conclusions: According to the findings of this study, the technology used in QHIFL cannot show the capabilities of

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Original Article

Early administration of surfactant via a thin intratracheal catheter in preterm infants with respiratory distress syndrome: Feasibility and outcome

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ABSTRACT

Objective: Currently, the method of early nasal continuous positive airway pressure (nCPAP) and selective administration of surfactant via an endotracheal tube is widely used in the treatment of respiratory distress syndrome (RDS) in premature infants. To prevent complications related to endotracheal intubation and even a brief period of mechanical ventilation, in this study, we compared the effectiveness of surfactant administration via a thin intratracheal catheter versus the current method using an endotracheal tube.

Methods: Thirty-eight preterm infants ≤34 weeks' gestation with birth weight of 1000–1800 g who were putted on nCPAP for RDS within the first hour of life, were randomly assigned to receive surfactant either via endotracheal tube (ET group) or via thin intratracheal catheter (CATH group). The primary outcomes were the need for mechanical ventilation and duration of oxygen therapy. Data were analyzed by independent *t*-test, Mann–Whitney U-test, followed by Chi-square test.

Findings: There was no significant difference between groups regarding to need for mechanical ventilation during the first 72 h of birth (3 [15.8%] in ET group vs. 2 [10.5%] in CATH group; $P = 0.99$). Duration of oxygen therapy in CATH group was significantly lower than ET group (243.7 ± 74.3 h vs. 476.8 ± 106.8 h, respectively; $P = 0.018$). The incidence of adverse events during all times of surfactant administration was not statistically significant between groups ($P = 0.14$), but the number of infants who experienced adverse events during surfactant administration was significantly lower in CATH group than ET group (6 [31.6%] vs. 12 [63.2%], respectively; $P = 0.049$). All other outcomes, including duration of treatment with CPAP and mechanical ventilation, times of surfactant administration and the need for more than one dose of the drug, the rate of intraventricular hemorrhage, mortality and combined outcome of chronic lung disease or mortality were statistically similar between the groups

Conclusion: Surfactant administration via thin intratracheal catheter in preterm infants receiving nCPAP for treatment of RDS has similar efficacy, feasibility and safety to its administration via endotracheal tube.

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INTRODUCTION

Respiratory distress syndrome (RDS) is considered one of the important causes of morbidity and mortality in preterm infants especially among extremely low birth weight ones. Mechanical ventilation through endotracheal tube even for a short time could cause lung tissue damage and surfactant inactivation.[1,2]

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High Flow Nasal Cannula in the Treatment of Respiratory Distress Syndrome in One Day-old Neonate

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Authors' contributions

This work was carried out in collaboration between all authors. Author RI designed the study, wrote the protocol and wrote the first draft of the manuscript. Authors AS and SSA managed the literature searches, analyses of the study performed the spectroscopy analysis. Authors RI and SSA managed the experimental process and author RI identified the species of plant. All authors read and approved the final manuscript.

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Original Research Article

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ABSTRACT

Background: This study was carried out to compare high flow nasal cannula (HFNC) and nasal intermittent mandatory ventilation (NIMV) in respiratory support of one day-old neonates with respiratory distress syndrome (RDS).
Methods: This was a clinical trial conducted in neonatology wards of two university affiliated hospitals from Sep 2013 to Dec 2014. Inclusion criteria were gestational age of 30 to 35 weeks, appropriate weight for gestational age, clinical signs and symptoms of RDS, and RDS suggestive chest-X ray. All patients with RDS were treated with NIMV for one day. Those requiring NIMV respiratory support more than one day and showed the signs of respiratory distress were randomized into two groups of NIMV and HFNC. Each group consisted of 30 patients. Outcome measures included chronic lung disease, mechanical ventilation, failure to treatment, the time to

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Original Article Open Access

A Comparison of the Effect of Nasal bi-level Positive Airway Pressure and Sigh-positive Airway Pressure on the Treatment of the Preterm Newborns Weighing Less than 1500 g Affiliated with Respiratory Distress Syndrome

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ABSTRACT

Background: Nowadays, administering noninvasive positive airway pressure (PAP) is considered as the building block for the management of respiratory distress syndrome (RDS). Since nasal continuous PAP (n-CPAP) established its roots as an interventional approach to treat RDS, there have always been concerns related to the increased work of breathing in newborns treated with this intervention. Therefore, respiratory support systems such as nasal bi-level PAP (N-BiPAP) and sigh-PAP (SiPAP) have been developed during the last decade. In this study, two respiratory support systems which, unlike n-CPAP, are categorized as cycled noninvasive ventilation, are studied.

Methods: This study was a randomized clinical trial done on 74 newborns weighing 1500 g or less affiliated with RDS hospitalized in NICU at Al-Zahra Hospital from October 2012 to March 2014. Patients were randomly assigned to two respiratory support groups of N-BiPAP and SiPAP. Each group contained 37 newborns who were compared, according to their demographic characteristics, duration of noninvasive ventilation, the need to administer surfactant, apnea incidence, the need for mechanical ventilation, pneumothorax, intraventricular hemorrhage (IVH), patent ductus arteriosus (PDA), the duration of oxygen supplement administration, and chronic lung disease (CLD).

Results: The average duration of noninvasive respiratory support, and the average duration of the need for oxygen supplement had no significant difference between the groups. Moreover, apnea incidence, the need for mechanical ventilation, pneumothorax, IVH, PDA, CLD, the need for the second dose of surfactant, and the death rate showed no significant difference in two groups.

Conclusions: In this study, SiPAP showed no significant clinical preference over N-BiPAP in the treatment of the newborns with RDS weighing <1500 g.

Keywords: Nasal bi-level positive airway pressure, premature newborn, respiratory distress syndrome, sigh-positive airway pressure

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INTRODUCTION

Prematurity is still considered a health issue in the United States. In 2008, 12.3% of live birth had the