Original Research Paper

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Role of Naso-Pharyngeal CPAP in Extremely Premature Baby With Respiratory Distress

Medical Science

KEYWORDS : - Apnoea , CPAP(Continuous Positive airway pressure), NCPAP (nasopharyngeal Continuous Positive airway

Dr.L Sushima Devi	Department of Pediatrics,D.Y.Patil Medical College , Kadamwadi Kolhapur,Maharashtra,416003
Dr.Anil B Kurane	Department of Pediatrics,D.Y.Patil Medical College , Kadamwadi Kolhapur,Maharashtra,416003
Dr.Kashalkar Nivedita Patil	Department of Pediatrics,D.Y.Patil Medical College , Kadamwadi Kolhapur,Maharashtra,416003
Dr.Nithin S Shagale	Department of Pediatrics,D.Y.Patil Medical College , Kadamwadi Kolhapur,Maharashtra,416003

ABSTRACT

In the present article we are trying to study a case of Apnoea of prematurity by using Naso-pharyngeal CPAP

INTRODUCTION:

Apnoea of prematurity is defined as cessation of breathing by a premature infant that lasts for more than 20 seconds and/or is accompanied by hypoxia or bradycardia. Apnoea is traditionally classified as either obstructive, central, or mixed.Obstructive apnoea may occur when the infant's neck is hyperflexed or hyperextended. It may also occur due to low pharyngeal muscle tone or to inflammation of the soft tissues, which can block the flow of air though the pharynx and vocal cords. Central apnoea occurs when there is a lack of respiratory effort. This may result from central nervous system immaturity, or from the effects of medications or illness. Many episodes of apnoea of prematurity may start as either obstructive or central, but then involve elements of both, becoming mixed in nature. The diagnosis of apnoea of prematurity can be readily identified from other forms of infant apnoea such as obstructive apnoea, hypoventilation syndromes, breathing regulation issues during feeding, and reflux associated apnoea with an infant pneumogram or infant apnoea/sleep study.

The medication with Methylxanthines (theophylline and caffeine) had been used for almost three decades to treat apnoea of prematurity. The dosing of caffeine citrate is given as a loading dose of 20 mg/kg followed by maintenance of 5 mg/kg per day, which could be increased to 10 mg/kg per day for persistent apnoea. The timing of Caffeine for AOP (Apnoea of Prematurity) is to be given as early as <3 days, compared with later (≥3 days) was associated with a shorter duration of mechanical ventilation. Increasing the environmental oxygen level by placing the infant in a tent of hood with supplemental oxygen can diminish the frequency of AOP, and may also help the infant maintain adequate oxygenation during short episodes of apnoea. Increased oxygen at low levels can also be delivered using a nasal cannula, which additionally may provide some stimulation due to the tactile stimulation of the cannula. CPAP (continuous positive airway pressure) is sometimes used for apnoea when medications and supplemental oxygen are not sufficient.

Uses of Nasopharyngeal CPAP : The purpose of Nasopharyngeal CPAP is to reduce the morbidity due to barotrauma and subglottic stenosis from having a neonate intubated and mechanically ventilated because of respiratory failure or apnoea. The two types of NCPAP are available – Nasopharyngeal tube and nasal prong method. The management of NPCPAP Pressure is to set CPAP at 4-7 cm of H2O pressure. The indications for NPCPAP are apnoea of Prematurity (obstructive and/or mixed apnoea) , respiratory distress (i.e., tachypnea, and/or retractions) ,RDS, Transient Tachypnea of Newborn , chronic lung disease and weaning from the ventilator. The complications of NP-CPAP are Pneumothorax,Nasal irritation (i.e mucosal swelling or erosion, excessive nasal dilatation or septal necrosis), abdominal distension and feeding intolerance.Abdominal distension and feeding intolerance is minimized by using continuous drip feeds along with placement of the infant on the stomach or side. Additionally, the placement of an oral gastric tube to straight drain will minimize accumulation of air in the GI tract. The weaning off NP-CAP is done when Oxygen requirement is less than 30%. The CPAP pressure, is decrease gradually to 4-6 cm and maintain the pressure at this level until tachypnea and retractions have resolved.

CASE REPORT : A 4 days old female baby presented with respiratory distress, transferred from a private hospital was admitted to our Paediatric Department at D.Y.Patil Hospital, Kolhapur. She was delivered preterm (by normal vaginal delivery) at 28th weeks of gestation , weighting 1000 gm and had respiratory distress for the last 3 days. She was treated with antibiotics for three days and surfactant was given at 8th hours of life. On day 4th of life, she was put on a ventilator and her blood report shows deranged INR and hyperbilirubinaemia. She was treated with single surface phototherapy and 3 units of FFP(fresh frozen plasma) were given. She had one episode of apnoea on 6th day and Inj.Caffeine 10mg/kg was added. On day 7th of life she was extubated from the ventilator and put her on CPAP with 4L of oxygen/min. On day 9th of life the baby was having difficulty in breathing and signs of chest retractions with nasal flaring were seen, she was put on nasopharyngeal CPAP, started Inj. Aminophylline. On day 13th oral RT feeding was started and continued the same treatment for 10 days. On 23rd the baby was presenting with pale look, review the complete blood count which was came deranged with Hemoglobin - 8.1gm% and platelet count -40,000 so we have given PCV and 1 unit of RDP. From 26th of life the baby was tolerating full feed with daily weight gain, passing urine and stool regularly. The baby was active, maintaining oxygen saturation by O2 hood for 5 days with sepsis screening negative, so we hold antibiotics and continue supportive treatment.

CONCLUSION : As surfactant has a role in RDS in preterm neonates and additional support by nasopharyngeal

CPAP is very effective in apnoea of prematurity with extreme low birth weight rather than mechanical ventilator. The baby responded to nasopharyngeal CPAP and symptoms of apnoea of prematurity and respiratory distress were improved.