Randomized controlled trial of two methods of nasal continuous positive airway pressure (N-CPAP) in preterm infants with respiratory distress syndrome: underwater bubbly CPAP vs. Medijet system device

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SUMMARY: Hosseini MB, Heidarzadeh M, Balila M, Ghojazadeh M, Janani R, Safavi-nia S, Naghavi-Behzad M, Alikhah H. Randomized controlled trial of two methods of nasal continuous positive airway pressure (N-CPAP) in preterm infants with respiratory distress syndrome: underwater bubbly CPAP vs. Medijet system device. Turk J Pediatr 2012; 54: 632-640.

There has been an increasing interest in the application of non-invasive respiratory support in preterm infants, and different types of nasal continuous positive airway pressure (N-CPAP) devices are being used in Neonatal Intensive Care Units (NICUs). The objective of the present study was to compare the duration of CPAP need and possible complications of two methods of (N-CPAP) delivery: Bubble CPAP (B-CPAP) and Medijet (MJ) system device in preterm infants with respiratory distress syndrome (RDS). This prospective randomized clinical trial was performed on 161 preterm infants (28-37 weeks of gestational age) with RDS and eligible for CPAP therapy. The infants were inborn and admitted in a level III NICU of Al-Zahra Teaching Hospital (Tabriz, Iran) from April 2010 to September 2011. All infants were randomized in the first hour of life to B-CPAP or MJ system. Short binasal prongs were used in both groups and CPAP was set at the level of 5-6 cm H_2O. The primary outcome of this study was duration of CPAP need (hour). Other outcomes, such as complications of the two methods of N-CPAP, were evaluated using a checklist. Ninety infants were randomized to the MJ system, and 71 were randomized to B-CPAP. The mean gestational age and birth weight were similar in the two groups, as was the duration of CPAP need (44.3±20.64 vs. 49.2±21.2 hours, respectively; p=0.66). Moreover, the probability of complications, such as CPAP failure rate, pulmonary hemorrhage, pneumothorax, intraventricular hemorrhage, abdominal distention, necrotizing enterocolitis, and bronchopulmonary dysplasia, was the same between the two study groups (p>0.05). There was a trend of more hyperemia of the nose in the B-CPAP group in comparison to the MJ system group (10% versus 3.3%, respectively), but the difference was not significant (p=0.08). In conclusion, the MJ system is as effective as B-CPAP in the management of infants with RDS.

Key words: continuous positive airway pressure, mechanical ventilation, preterm infants, respiratory distress syndrome.

mortality[1]