

Helmet versus nasal-prong cpap in infants with acute bronchiolitis

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BACKGROUND: Nasal prongs are frequently used to deliver noninvasive CPAP in bronchiolitis, especially in the youngest children. A helmet interface is an alternative that might be comparable to nasal prongs. We sought to compare these interfaces. **METHODS:** We performed a prospective, randomized, crossover, single-center study in an 8-bed multidisciplinary pediatric ICU in a university hospital. Infants age ≤ 3 months who were consecutively admitted to the pediatric ICU during a bronchiolitis epidemic season and fulfilled inclusion criteria were recruited. Subjects were randomly allocated to receive CPAP via a helmet or nasal prongs for 60 min. The subjects were then placed on the other CPAP system for another 60-min period (helmet then nasal prongs [H-NP] or nasal prongs then helmet [NP-H]). Measurements were taken at 30, 60, 90, and 120 min. Failure was defined as the need for further respiratory support. **RESULTS:** Sixteen subjects were included, with 9 in the H-NP group and 7 in the NP-H group. CPAP significantly reduced respiratory distress, showing no differences between the H-NP and NP-H groups in terms of improving the Modified Wood's Clinical Asthma Score from 4.8-1 to 3-0.9 and 2.7-1.7 points at 60 min and 120 min in the H-NP group, respectively, and from 4.2-0.9 to 2.8-0.9 and to 2.9-0.9 at 60 min and 120 min, respectively, in the NP-H group. Sedatives were used in only 3 subjects (2 in the NP-H group, $P = .77$). The failure rate was similar in both groups (3 of 9 subjects vs 3 of 7 subjects, $P = .70$). No significant differences were seen for heart rate, breathing frequency, FIO₂, or trans-cutaneous oxygen saturation response. **CONCLUSIONS:** Our results suggest that CPAP delivered by nasal prongs and CPAP delivered by helmet are similar in terms of efficacy in young infants with acute

bronchiolitis. Key words: bronchiolitis; continuous positive airway pressure; noninvasive ventilation; helmet; nasal prongs; infants. [Respir Care 2018;63(4):455-463. © 2018 Daedalus Enterprises]. © 2018, American Association for Respiratory Care. All rights reserved.