

Early nasal intermittent positive pressure ventilation(NIPPV) versus nasal continuous positive airway pressure (NCPAP) for preterm infants with respiratory distress syndrome (RDS): a systematic review and meta-analysis

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Abstract

Abstract Objectives To systematically assess the beneficial effects of early NIPPV over NCPAP by performing a meta-analysis of current evidence. Data sources Medline, Embase, Web of science and the Cochrane Central Register of Randomized Controlled Trials(RCTs) was performed inception through 4 October 2019. Data Extraction and Synthesis Data were extracted independently by the three authors. The protocol of the systematic review was registered(number CRD42019147307). Pooled relative risk(RR) were estimated using the fixed-effects models, and the random-effects models were performed whenever more than 50% heterogeneity was shown. Heterogeneity was evaluated using the I2 method. Results 11 RCTs met the included criteria(n=1475). The meta-analysis demonstrated that, as compared with NCPAP, early NIPPV simultaneously reduced the incidences of IV (relative risk(RR):0.51, 95% confidence interval(CI): 0.42-0.62, P<0.00001) and BPD(RR: 0.51, 95%CI: 0.37-0.71, P<0.0001). Similarities were also shown in the subgroups of infants receiving surfactant(IV (RR:0.59, 95%CI:0.45-0.77, P=0.0001) and BPD (RR: 0.57, 95%CI:0.37-0.87, P=0.009)), whose gestational age(GA)>30 weeks or birth weight(BW)>1,500g(IV(RR: 0.46, 95%CI: 0.33-0.63, P<0.00001) and BPD (RR:0.37,95%CI: 0.14-0.93, P=0.03)), and BPD and/or death(IV (RR: 0.51, 95%CI:0.40-0.67,P<0.00001) and BPD(RR: 0.46; 95%CI: 0.27- 0.81 P=0.007)). However, in the subgroups of infants whose GA[?]30 weeks or BW[?]1,500g, the incidences of IV and BPD were not simultaneously decreased. **Conclusions** Early NIPPV can be superior to NCPAP for simultaneously decreasing the incidences of IV and BPD in preterm infants with RDS. Early NIPPV as a better substitute for NCPAP may help to prevent BPD.

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