



September 15th, 2021 17:30 - 18:30

ROBERTSON AWARD

ID 83. SHORT-TERM EFFECTS OF SYSTEMIC HYDROCORTISONE INITIATED 7 TO 14 DAYS AFTER BIRTH IN VENTILATED VERY PRETERM INFANTS

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BACKGROUND

The Systemic Hydrocortisone To Prevent Bronchopulmonary Dysplasia in preterm infants (the SToP-BPD) study is the first large randomized placebo-controlled trial investigating the effect of systemic hydrocortisone treatment initiated in the second week of life in ventilator-dependent preterm infants on the primary outcome death or bronchopulmonary dysplasia at 36 weeks' postmenstrual age. In the current study, we performed a secondary in-depth analysis of the short-term pulmonary and systemic effects of hydrocortisone treatment based on the data collected in the SToP-BPD study.

METHODS

Eligible preterm infants with a gestational age <30 weeks and/or birth weight <1250 grams were randomly assigned between 7-14 days of life to a 22-day course of systemic hydrocortisone (cumulative dose 72.5 mg/kg; n=182) or placebo (n=190). Data on extubation, ventilator mode and settings, blood glucose levels, and blood pressure were recorded daily during the 22-day treatment course. Changes over time during the first 7 days of treatment for the ventilator mode and settings, blood glucose levels, and blood pressure were compared between treatment groups with linear mixed effects models.

RESULTS

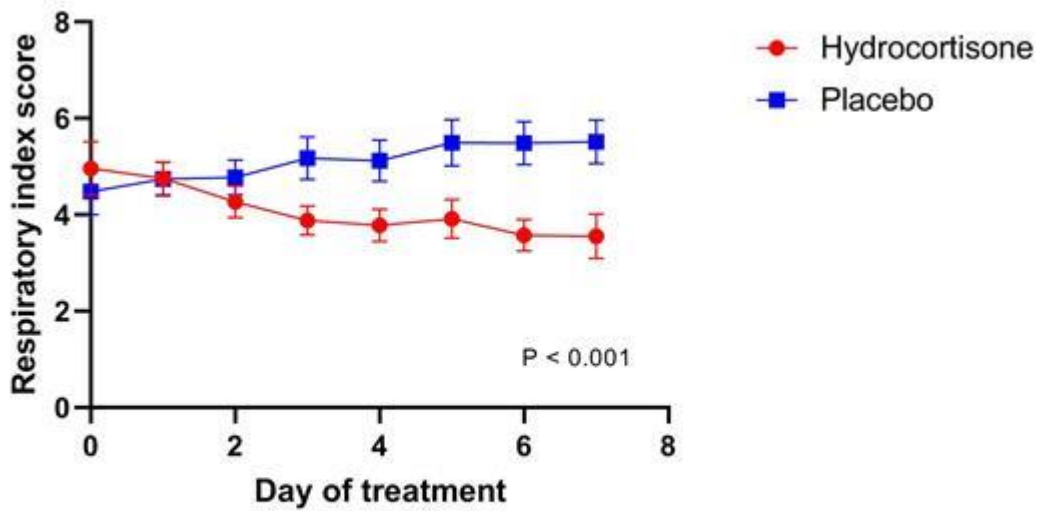
At the end of the 22-day treatment course, a significantly lower proportion of infants in the hydrocortisone group failed extubation compared to the placebo group (23.2% [42/181] vs 34.9% [66/189], respectively; crude risk difference, -11.7% [95% CI, -20.7% to -2.4%]). Mean airway pressure, fraction of inspired oxygen



and respiratory index decreased significantly over the first 7 days of treatment in infants treated with hydrocortisone compared to placebo (-0.42 cmH₂O [95% CI, -0.48 to -0.35], -0.02 [95% CI, -0.02 to -0.01], and -0.37 [95% CI -0.44 to -0.30], respectively; all p<0.001). Blood glucose levels and mean blood pressure increased significantly over the first 7 days in hydrocortisone treated infants (0.14 mmol/L [95% CI, 0.08 to 0.21] and 0.84 mmHg [95% CI, 0.58 to 1.09], respectively; both p<0.001).

CONCLUSION

Systemic hydrocortisone initiated between 7-14 days after birth in mechanically ventilated preterm infants born before 30 weeks' gestation significantly improves the pulmonary condition, thereby facilitating weaning and extubation from invasive mechanical ventilation.



Number of infants	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Hydrocortisone	181	164	124	101	92			
Placebo	190	177	167	145	140			

Figure 1. Changes over first 7 days of treatment in mean values for Respiratory Index (defined as MAWP × FiO₂), with 95% confidence intervals analyzed with linear mixed effects models.

None declared