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# Letter to the Editor

## Adverse Effects of Bronchodilators in Infants With Bronchiolitis

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In a recently published systematic review and meta-analysis, which included 30 trials representing 1992 infants with bronchiolitis, the authors concluded that bronchodilators such as albuterol and salbutamol do not improve oxygen saturation, do not reduce hospital admission after outpatient treatment, do not shorten the duration of hospitalization, and do not reduce the time to resolution of illness at home.[1] The authors were concerned about the adverse side effects and identified trials that had significantly more infants with tachycardia in the group exposed to bronchodilators, but the effect on heart rate was not quantified.[1] A previous study of asthmatic children assessed the adverse effect of bronchodilators on heart rate and investigated, as primary outcome, the largest percentage of change in heart rate between groups. The median largest percentage of change in heart rate was 4.1% (interquartile range [IQR], 1.8-8.7) in the levalbuterol group compared to 5% (IQR, 1.9-7.8) in the racemic albuterol group (p=0.76). Groups included patients with additional ipratropium bromide. This study investigated the largest heart rate change in relation to 3 consecutive doses of bronchodilator and did not investigate the dose of nebulized bronchodilator per kilogram of body weight in relation to heart rate change.[2] We recently reported effects of salbutamol on maximum change in heart rate in the first 24 hours after admission to hospital compared to heart rate on admission in 201 children (median: 5.2 months of age [IQR: 2.1-11.1]) with respiratory syncytial virus bronchiolitis.[3] A total of 115 infants received bronchodilators, and data were available for heart rate. Multiple linear regression analysis entering heart rate change as a dependent variable and age and total daily nebulized bronchodilator dose per kilogram of bodyweight as an independent variables showed that change in heart rate was independent of age and was significantly associated with bronchodilator dose (beta=0.25; t=2.67; p<0.01) and that age was not significantly associated with heart rate change (beta=0.14; t=1.48; p=0.14). When we investigated heart rates that increased 5 or more beats per minutes after treatment, we found such an increase with 40 of 77 regimens which contained salbutamol, whereas in only 7 of 38 regimens, which contained only ipratropium bromide (p<0.01). In our systematic investigation, we therefore confirmed that nebulized beta-agonist treatment is associated with an increase in heart rate which puts additional stress on infants, without documented evidence of benefit, as the recently published systematic review demonstrated.[1]

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