Bronchiolitis: Doing Less and Still Getting Better

Infection with respiratory syncytial virus (RSV) is among the universal experiences of childhood. Worldwide, by 1 year of life, half of all children have been infected with RSV and by 2 years of age, virtually all children have been infected with RSV. Unlike many viral infections, it is the prevalence, as opposed to the severity, of infection that motivates our collective focus on the optimal treatment course for infants with RSV. Although acknowledging that in some small subset of high-risk infants, preventive strategies are justified, the focus of this commentary concerns a randomized, controlled trial of treatment with nebulized hypertonic saline in infants with acute bronchiolitis published in this issue of Pediatrics.

In general, bronchiolitis results primarily from RSV infection and causes a few days of congestive symptoms before resolving spontaneously. Despite suggestions that RSV infection increases the longitudinal risk for developing asthma, there is little direct evidence in support of such an association. In fact, there is substantial evidence indicating that infants with underlying airways reactivity, as demonstrated by neonatal pulmonary function before acquiring a viral infection, are more likely to be more symptomatic from RSV infection than infants with normal pulmonary function.

Taken together, these observations beg the question of whether, as opposed to how, to treat infants with bronchiolitis. Certainly some infants with bronchiolitis are hypoxemic, dehydrated, or at risk for respiratory collapse. Providing supplemental oxygen for truly hypoxemic infants (oxygen saturations <90%) or intravenous fluids for infants unable to feed or drink owing to tachypnea or increase in work of breathing is without controversy. Such children represent an important, but relatively small percentage of children with bronchiolitis.

However, in the overwhelming majority of children with bronchiolitis, symptoms of fever, cough, wheeze, and nasal congestion are modest and readily managed conservatively, absent hospitalization. The illness is generally self-limited. Supportive care can be provided in the home.

The article entitled “7% Hypertonic saline in acute bronchiolitis: a randomized controlled trial” by Jacobs et al explicitly addresses the propriety of treating bronchiolitic infants with hypertonic saline. However, the article also implicitly addresses the notion of whether to treat infants with bronchiolitis. Relative to the treatment tested in the piece written by Jacobs et al, the conclusions seem both important and clear: Nebulized delivery of 7% saline did not confer a measurable advantage over 0.9% saline delivered via nebulizer. The findings support previous reports wherein 3% saline conferred no benefit relative to 0.9% saline. Perhaps these reports, taken together, might allow for the collective realization that hypertonic saline confers no objective and reproducible benefit in the context of bronchiolitis. Notwithstanding
the relatively consistent message between studies, that there is no substantial benefit with nebulized hypertonic saline, there is substantial likelihood that further investigations will be undertaken to identify the exact circumstances wherein nebulized saline might confer a previously unknown clinical benefit. After all, each of the trials includes some imperfection. In the present article, investigators used epinephrine in both treatment and control arms, leaving open the suggestion that nebulized epinephrine might somehow counter the beneficial effects of hypertonic saline. Although this aspect of the study seems completely reasonable, doubtless it can be used to mitigate the study’s conclusions.

As opposed to devoting time, effort, and resources to identify a strategy wherein a questionable therapeutic intervention (hypertonic saline) might be optimized to allow for detection of a marginal therapeutic benefit, might we do better by considering the unstated implications of this trial, especially in light of similar efforts to “treat” bronchiolitis? Present data suggest that rather than treating bronchiolitis, patients with bronchiolitis ought to be supported. Perhaps the time has arrived to recognize the limits of our putative interventions, especially those with uncertain or difficult to measure benefit, and focus effort on doing more even while doing less. In the context of bronchiolitis, perhaps the most important message of the article is that a self-limited illness might be best managed with limited treatments.

Might we do better, collectively, by recognizing that a negative clinical trial can be as instructive as a positive trial? As demonstrated by this article, it seems likely that hypertonic saline confers little or no therapeutic benefit. In that case, hypertonic saline can be placed in the same category as β-agonist therapy, oral albuterol syrup, systemic steroids, and racemic epinephrine as treatment strategies for bronchiolitis that ought not to be routinely applied.

REFERENCES
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David N. Cornfield

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