Hypertonic Saline for Bronchiolitis Doesn’t Shorten Inpatient Stay


Investigators from multiple institutions assessed whether nebulized 3% hypertonic saline administered to infants hospitalized for bronchiolitis was associated with a shorter length of stay. Children <12 months old with bronchiolitis admitted to an urban tertiary care children’s hospital were enrolled in the study. Infants with a history of wheezing were not excluded unless they were treated for status asthmaticus. In this randomized, double-blind controlled study, participants received nebulized 3% hypertonic saline (intervention) or normal saline (control) every 4 hours while hospitalized. The primary outcome was length of hospital stay, and secondary outcomes included 7-day readmission rate and clinical worsening (defined as transfer to PICU, bronchospasm as indicated by worsening of validated respiratory distress score, or unforeseen adverse events). Of 765 infants screened for eligibility, 227 were enrolled and randomized: 113 were assigned to the hypertonic saline group and 114 to the normal saline group. The mean age was 3.9 months in the hypertonic saline group and 4.4 months in the control group. Treatment groups did not differ in age, gender, race, viral status, history of wheeze, or history of prematurity. There was no difference in the length of stay, with both groups having a median length of stay of 2.1 days ($P = .73$). The groups also did not show significant differences in readmission rates or clinical worsening. Administration of hypertonic saline was not associated with adverse events.

The authors conclude that treatment with 3% hypertonic saline compared to normal saline does not alter length of stay or readmission rate.

**Commentary by**

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Dr Lesser has disclosed no financial relationship relevant to this commentary. This commentary does not contain a discussion of an unapproved/investigative use of a commercial product/device.

Bronchiolitis is the most common reason for hospital admission of infants in the United States.1 Hypertonic saline may be beneficial in alleviating airway obstruction in infants with bronchiolitis by decreasing mucus viscosity and improving mucociliary clearance.2 Yet findings of pediatric studies investigating the use of hypertonic saline for bronchiolitis have not consistently shown benefit. Several early studies suggested clinical benefit (see AAP Grand Rounds, February 2010;23[2]:16), and a 2013 Cochrane review concluded that 3% hypertonic saline may significantly reduce length of stay and improve clinical severity score.3 The 2014 American Academy of Pediatrics bronchiolitis guideline suggests that clinicians may administer hypertonic saline to hospitalized pediatric patients.3 More recently, however, larger studies failed to identify benefit for administration of hypertonic saline to hospitalized infants.4 The authors of 2 meta-analyses published since the 2013 Cochrane review did not agree on the effectiveness of hypertonic saline; both agreed that the inconsistency among trials limits the quality of overall evidence.4,5

A strength of the current study lies in its prospective, randomized, double-blind controlled design and relatively large number of infants enrolled. Unique features compared to previous studies include enrollment of children with and without history of wheezing and use of hypertonic saline without bronchodilators. There are some notable limitations. Although the study was relatively large, it was from a single center, potentially limiting generalizability of results. Although the primary outcome (length of stay) is important, clinicians are also interested in therapeutic benefit with regard to easing respiratory distress and decreasing oxygen need. While use of change in respiratory scores as an outcome may have imparted this information, the limited validity of these scores can affect accuracy of conclusions.

Treatment of bronchiolitis with hypertonic saline remains controversial. While most studies agree that the therapy is safe, disagreement remains as to its overall effectiveness. Heterogeneity in patient populations, diagnostic method, timing, and type of treatment likely explain this variability.3,4 Compared to earlier reports, more recent studies with higher evidence levels fail to show benefit.5 Based on the findings of the present study, hypertonic saline given to infants admitted for bronchiolitis does not shorten hospital length of stay.

**References**


**Key words:** bronchiolitis, hypertonic saline, length of stay

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