

A Multicenter, Randomized, Double-Blind, Controlled Trial of Nebulized Epinephrine in Infants with Acute Bronchiolitis

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There has been a lot of controversy and interest in the role of bronchodilators, particularly adrenaline, in the management of acute viral bronchiolitis. Many small and inconclusive studies have been published. This Australian study had the advantage of reasonable sample size. The weakness is the use of outcome measures related to length of hospital stay as this is a very noisy/dirty outcome measure, although the investigators did their best to allow for these difficulties. It suggests that adrenaline has no useful role in mild/moderate bronchiolitis but I don't believe it answers the question "can adrenaline reduce the risk of needing mechanical respiratory support in severe bronchiolitis?" MIKE

Background

The treatment of infants with bronchiolitis is largely supportive. The role of bronchodilators is controversial. Most studies of the use of bronchodilators have enrolled small numbers of subjects and have examined only short-term outcomes, such as clinical scores.

Methods

We conducted a randomized, double-blind, controlled trial comparing nebulized single-isomer epinephrine with placebo in 194 infants admitted to four hospitals in Queensland, Australia, with a clinical diagnosis of bronchiolitis. Three 4-ml doses of 1 percent nebulized epinephrine or three 4-ml doses of normal saline were administered at four-hour intervals after hospital admission. Observations were made at admission and just before, 30 minutes after, and 60 minutes after each dose. The primary outcome measures were the length of the hospital stay and the time until the infant was ready for discharge. The secondary outcome measures were the degree of change in the respiratory rate, the heart rate, and the respiratory-effort score and the time that supplemental oxygen was required.

Results

There were no significant overall differences between the groups in the length of the hospital stay ($P=0.16$) or the time until the infant was ready for discharge ($P=0.86$). Among infants who required supplemental oxygen and intravenous fluids, the time until the infant was ready for discharge was significantly longer in the epinephrine group than in the placebo group ($P=0.02$). The need for supplemental oxygen at admission had the greatest influence on the score for severity of illness and strongly predicted the length of the hospital stay and the time until the infant was ready for discharge ($P<0.001$). There were no significant changes in the respiratory rate, blood pressure, or respiratory-effort scores from before each treatment to after each treatment. The heart rate was significantly increased after each treatment with epinephrine ($P=0.02$ to $P<0.001$).

Conclusions

The use of nebulized epinephrine did not significantly reduce the length of the hospital stay or the time until the infant was ready for discharge among infants admitted to the hospital with bronchiolitis.

Dating of Bruises in Children: An Assessment of Physician Accuracy

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This study confirms several previously published: the accuracy of dating bruising is very poor. A useful reminder when we are asked to do this in cases of suspected NAI.

MIKE

Objective.

To determine whether physicians can estimate accurately the age of an accidental bruise on direct physical examination.

Methods.

Children who presented to the emergency department of a children's hospital with accidental bruises of known age and origin had demographic data and information about their injury recorded. History-blinded emergency pediatricians, other physicians, and trainees (fellows, residents, and medical students) independently examined the bruised area and recorded injury characteristics and age estimation and ranked characteristics that influenced their estimation.

Results.

Fifty children with accidental bruises were enrolled. Emergency pediatricians' accuracy of age estimation within 24 hours of actual age was 47.6%. Individual emergency pediatrician's accuracy ranged from 0% to 100%, and the interobserver reliability was poor ($\kappa = -0.03$). Accuracy within 24 hours of actual age was 29.4% for other physicians and 36.8% for trainees, which was similar to the emergency pediatricians. Observers reported using color primarily to estimate age, followed by tenderness and then swelling; however, none of these factors was significantly correlated with accuracy.

Conclusions.

Physician estimates of bruise age are highly inaccurate within 24 hours of the actual age of the injury. Large individual variability and poor interrater reliability also suggest that caution must be used when interpreting these estimates. This study supports earlier studies, urging extreme caution in estimating bruise age, even when such estimates are based on direct examination of the injured area.

Risk of Anaphylaxis After Vaccination of Children and Adolescents

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Do immunisations cause anaphylaxis? This study of 7.5 million doses suggests it is very rare (0.65 cases/million doses), but that immunisers still need to be prepared to treat anaphylaxis on the very rare occasions that it does occur.

MIKE

Objective.

To quantify the risk of anaphylaxis after vaccination of children and adolescents.

Methods.

The study population consisted of children and adolescents who were enrolled at 4 health maintenance organizations that participated in the Vaccine Safety Datalink Project. For the period 1991–1997, we identified potential cases by searching for occurrences of International Classification of Diseases, Ninth Revision (ICD-9) code 995.0 (anaphylactic shock), E948.0 through E948.9 (adverse reaction from bacterial vaccines), and E949.0 through E949.9 (adverse reaction from other vaccines and biological substances). At 1 study site, we also included a range of other allergy codes. We restricted to diagnoses on days 0 to 2 after vaccination (ICD-9 995.0) or day 0 (all other ICD-9 codes). We then reviewed the medical record to confirm the diagnosis.

Results.

We identified 5 cases of potentially vaccine-associated anaphylaxis after administration of 7 644 049 vaccine doses, for a risk of 0.65 cases/million doses (95% confidence interval: 0.21–1.53). None of the episodes resulted in death. Vaccines that were administered before the anaphylactic episodes were generally given in combination and included measles-mumps-rubella, hepatitis B, diphtheria-tetanus, diphtheria-tetanus-pertussis, Haemophilus influenzae type b, and oral polio vaccine. One case of anaphylaxis followed measles-mumps-rubella vaccine alone. At the site at which we reviewed additional allergy codes, we identified 1 case after 653 990 vaccine doses, for a risk of 1.53 cases/million doses (95% confidence interval: 0.04–8.52).

Conclusions.

Patients and health care providers can be reassured that vaccine-associated anaphylaxis is a rare event. Nevertheless, providers should be prepared to provide immediate medical treatment should it occur.

Does This Child Have Acute Otitis Media?

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There is some controversy around the useful features to make a clinical diagnosis of acute otitis media. This systematic review suggests that ear pain is the most predictive symptom, while fever, upper respiratory tract symptoms, and irritability are less useful.

The useful physical signs are: a cloudy, bulging, red and immobile tympanic membrane. A normal color makes otitis media unlikely.

MIKE

Context

Acute otitis media (AOM) is one of the most common problems in pediatrics. An accurate diagnosis of AOM can guide proper treatment and follow-up.

Objective

To systematically review the literature regarding precision and accuracy of history taking and physical examination in diagnosing AOM in children.

Data Sources

We searched MEDLINE for English-language articles published from 1966 through May 2002. Bibliographies of retrieved articles and textbooks were also searched.

Study Selection

We located studies with original data on the precision or accuracy of history or physical examination for AOM in children. Of 397 references initially identified, 6 met inclusion criteria for analysis.

Data Extraction

Two authors independently reviewed and abstracted data to calculate likelihood ratios (LRs) for symptoms and signs.

Data Synthesis

Four studies of symptoms used clinical diagnosis as the criterion standard and were limited by incorporation bias. Ear pain is the most useful symptom (positive LRs, 3.0-7.3); fever, upper respiratory tract symptoms, and irritability are less useful. One study of clinical signs used tympanocentesis as the criterion standard, and we adjusted the results to correct for verification bias. A cloudy (adjusted LR, 34; 95% confidence interval [CI], 28-42), bulging (adjusted LR, 51; 95% CI, 36-73), or distinctly immobile (adjusted LR, 31; 95% CI, 26-37) tympanic membrane on pneumatic otoscopy are the most useful signs for detecting AOM. A distinctly red tympanic membrane is also helpful (adjusted LR, 8.4; 95% CI, 6.7-11) whereas a normal color makes AOM much less likely (adjusted LR, 0.2; 95% CI, 0.19-0.21).

Conclusions

Although many of the studies included in this analysis are limited by bias, a cloudy, bulging, or clearly immobile tympanic membrane is most helpful for detecting AOM. The degree of erythema may also be

useful since a normal color makes otitis media unlikely whereas a distinctly red tympanic membrane increases the likelihood significantly.