The Role of Antibiotics in the Treatment of Acute Rhinosinusitis in Children: A Systematic Review


PURPOSE OF THE STUDY. To provide a systematic review of the current evidence for the efficacy of antibiotics compared with placebo in the treatment of acute rhinosinusitis in children.

METHODS. The authors searched Medline, Embase, and Cochrane Register for randomized controlled studies investigating the efficacy of antibiotics compared with children for treatment of acute sinusitis or acute rhinosinusitis for children between 1 and 18 years of age.

RESULTS. Ninety-six articles were identified in the search, with 84 articles being excluded for various reasons including not being a randomized controlled trial, not including children, not studying acute rhinosinusitis, not comparing antibiotics versus placebo, and/or repeat citation. Twelve studies were included for full text scrutiny with only 4 studies fulfilling selection criteria. The results of the meta-analysis suggest a benefit for those participants treated with antibiotics odds ratio 2.0 (95% confidence interval 1.16–3.47). Analysis is weakened by the low number of randomized controlled trials. Risks for internal bias were thought to be small, but external bias appeared significant. External bias included exclusion of patients with more severe disease, usage of ancillary medications and or saline nasal rinses, and differing antibiotics and varying age range.

CONCLUSIONS. Despite the positive findings of the statistical analysis favoring antibiotics for acute rhinosinusitis in children, the authors conclude that routine treatment with antibiotics remains uncertain. Gastrointestinal adverse reactions were nearly 3 times more common in those children treated with antibiotics compared with placebo. Children treated with placebo did not experience significant complications.

REVIEWER COMMENTS. This study reminds clinicians who interpret PSG that children may be more symptomatic with OSA during the winter and spring season. Consideration of repeating tests performed during summer and fall seasons may be helpful for children who have borderline results.


Mary V. Lasley, MD
Seattle, WA

The Role of Staphylococcal Enterotoxin in Atopic Keratoconjunctivitis and Corneal Ulceration


PURPOSE OF THE STUDY. To determine whether staphylococcal enterotoxin (SE) has a role in the pathogenesis of atopic keratoconjunctivitis (AKC) and corneal ulceration

STUDY POPULATION. Forty-five subjects were enrolled (18 with AKC, mean age 16.9 years; 9 with vernal keratoconjunctivitis [VKC], mean age 12.9 years; 10 with seasonal allergic conjunctivitis [SAC], mean age 21.9 years, and 8 healthy volunteers, mean age 21.6 years).

METHODS. Upper tarsal conjunctiva, lower conjunctival sac, and upper lid margin skin were swabbed for bacterial cultures done once in all subjects. Culture material was used for detection of 8 superantigen genes (SEA, B, C, D, G, H, I, and tsst-1), staphylococcal coagulase gene, and protein A gene with amplification by polymerase chain reaction.

RESULTS. Among with 45 subjects (adolescents and older), Staphylococcus aureus was detected in 15 with AKC (83%), 3 with VKC (33%), 1 with SAC (10%), and 0 in healthy volunteers. S. aureus was detected in similar percentages from the various sites examined (24%–38%). Superantigen genes were detected in 7 subjects with AKC (39%) and 1 with VKC (11%). There were no significant differences in SE detection according to location. Corneal ulcers were observed in 7 AKC subjects (39%) and 3 VKC subjects (33%) but no in SAC subjects or healthy volunteers. Among 27 patients with AKC and VKC, SE was detected in 6 of 10 subjects (60%) with corneal ulcers and 2 of 17 subjects (12%) without corneal ulcers. Among 18 AKC subjects, SE was detected in 5 of 7 subjects (71%) with corneal ulcers and 2 or 11 subjects (18%) without corneal ulcers.

CONCLUSIONS. In patients with a severe type of ocular allergic disease (AKC), S. aureus and SE were detected between a viral URI versus acute bacterial rhinosinusitis. Acute bacterial sinusitis is more likely when the presentation includes persistence of symptoms beyond 10 days, severe symptoms including fever ≥102° with purulent nasal discharge, facial pain lasting 3 to 4 days at the beginning of the illness, or worsening symptoms after a typical URI that lasted for 5 to 6 days with new onset of fever, headache, or increased nasal discharge. It is important to remember that a small percentage of URIs (5%–13%) become complicated by bacterial rhinosinusitis.
more frequently compared with other patients and healthy volunteers. This was most notable in association with corneal ulceration, suggesting a role for SE.

REVIEWER COMMENTS. This study suggests that SE has a pathogenic role in the development of ulcers in AKC. SE could produce tissue damage to the cornea by initiating an immune response or possible secondary to direct toxic effects, although SE is not a protease. The study supports the concept of prompt targeted immunomodulatory therapy to reduce morbidity from AKC, and additional studies are needed.


Stuart L. Abramson, MD, PhD
San Angelo, Texas

Asthma

PATHOPHYSIOLOGY

The Significance of Early Recurrent Wheeze for Asthma Outcomes in Late Childhood


PURPOSE OF THE STUDY. To assess the prognosis of early-life recurrent bronchial obstruction (rBO) through adolescence.

STUDY POPULATION. Five hundred and fifty of the 3754 healthy newborns enrolled in the Environment and Childhood Asthma prospective population-based birth cohort study in Oslo, Norway, and attended the 16-year follow-up study visit.

METHODS. rBO was determined between 0 and 2 years of age as ≥2 episodes of ≥3 respiratory symptoms (tachypnoea, wheezing, expiratory stridor, respiratory chest retractions, and sibilations/whistles) or if such an episode lasted ≥4 weeks. Subjects were assessed again at age 10 and 16 years of age for diagnosis of asthma, bronchial hyperresponsiveness (BHR) by methacholine challenge, and asthma symptoms (heavy breathing, wheezing, chest tightness, or dry nighttime cough without current cold or lower airway infection). Asthma was defined as ≥2 of the following: doctor-diagnosed asthma, asthma symptoms, and the use of antiasthmatic medication.

RESULTS. Of the 143 subjects with rBO at 2 years of age, 71% were classified as asthma between 2 and 10 years and 34% between 10 and 16 years of age, including 10% of those who were in remission in the 2- to 10-year time period and relapsed in adolescence. Forty-eight percent of the adolescents in the rBO-remission group had ≥1 of the reported asthma symptoms, asthma medication use, or BHR compared with 26.7% of those with no rBO/never asthma (P = .001). Lung function was significantly reduced in the rBO-remission group and rBO-asthma group compared with the no rBO group and similar to each other.

CONCLUSIONS. The prognosis of early rBO in this cohort demonstrated that only one-third had persistent asthma throughout childhood and adolescence. However, those with rBO at age 2 in remission at age 16 had reduced lung function as well as more frequent BHR and use of asthma medications, possibly indicating increased risk of subsequent respiratory disease in adulthood.

REVIEWER COMMENTS. This study reaffirms the overall good prognosis for infants and toddlers with a recurrent wheezy phenotype. However, half of the children with rBO and subsequent remission still suffered from asthma symptoms, used asthma medications, or had BHR in adolescence, indicating that the prevalence of asthma may be an underestimate of subsequent respiratory morbidity associated with early-life rBO.


Jonathan M. Gaffin, MD, MMSc
Wanda Phipatanakul, MD, MS
Boston, MA

Childhood Infections and the Risk of Asthma: A Longitudinal Study Over 37 Years


PURPOSE OF THE STUDY. To determine if past common childhood illnesses and infectious diseases including pneumonia, pertussis, measles, mumps, rubella, chickenpox, and diphtheria are associated with an increased risk of asthma persisting at various ages.

POPULATION. In the Tasmanian Longitudinal Health Study, 8583 Tasmanian schoolchildren were surveyed in 1968 at age 7 years and again at age 13 years.

METHODS. In 2004, a detailed respiratory questionnaire was completed by 5729 of the original participants. Each child’s history was cross-referenced for a history of measles, mumps, rubella, chickenpox, diphtheria, and pertussis and immunizations against diphtheria, pertussis, tetanus poliomyelitis, and smallpox. Associations with current, persisting, or incident asthma were examined by using regression techniques.

RESULTS. There was no association between any childhood infectious disease and current asthma at ages 7, 13, 32, and 44 years. Pertussis was associated with reduced odds of asthma persisting at age 13, whereas chickenpox and rubella indicated reduced odds of asthma persisting to age 32. The incidence of asthma was associated with pertussis in preadolescence and with measles in adolescence. As infection load increased, there was a decrease in the incidence of asthma risk in adult life. Childhood pneumonia was associated with current asthma at ages 7 and 13 after adjustments for other factors including eczema but did not reveal an association between childhood pneumonia and asthma persisting from childhood to ages 13, 32, and 44 years.
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