

Antibiotic treatment of acute otitis media in children under two years of age: evidence based?

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SUMMARY

Background. Appropriate use of antibiotics is one of the major issues in medicine today. In most countries, acute otitis media in children is treated with antibiotics; however, the efficacy of antibiotic use in every acute otitis media is a controversial issue. It may be worthwhile looking for special risk groups that benefit more from antibiotic treatment for acute otitis media. Children under two years of age with acute otitis media are at risk of poor outcome.

Aim. To assess whether the current high prescription rates of antibiotics for acute otitis media in children under two years of age (being a risk group for poor outcome) are based on an established increased efficacy.

Method. Systematic literature review and a quantitative analysis with an assessment of the methodological quality of published trials, comparing antibiotic treatment with non-antibiotic treatment in acute otitis media in children aged under two years.

Results. Six trials were included. Trials from before 1981 had a poor methodological quality. Four were suitable for the quantitative analysis. Only two of them were truly placebo-controlled. Of these two, one included only recurrent acute otitis media and the other included only non-severe episodes. With these restricted data, no statistically significant difference was found between antibiotic-treated children and controls under two years of age with acute otitis media, judged on the basis of clinical improvement within seven days (common odds ratio = 1.31; 95% CI = 0.83–2.08).

Conclusion. The current high prescription rates of antibiotics among children under two years of age with acute otitis media are not sufficiently supported by evidence from published trials. New randomized placebo-controlled trials using reliable methodology are needed in this young age group.

Keywords: antibiotics; infants; acute otitis media; prescription rates.

Introduction

ALTHOUGH most children with acute otitis media (AOM) may need only symptomatic treatment, up to 86% of all episodes of the infection are treated with antibiotics.^{1,2} Two

recent meta-analyses on the effect of antibiotic treatment for AOM showed only a modest effect.^{3,4} Rosenfeld *et al* included 33 studies of children aged four weeks to 18 years, and the outcome of AOM was improved in only one in seven children treated with antibiotics.³ Del Mar *et al* included six studies of children aged seven months to 15 years and they found that 17 children needed to be treated to prevent pain in one child at 2–7 days after presentation.⁴ Currently, no studies have identified subcategories of patients with AOM in whom antibiotic treatment is more effective. Howie introduced the 'otitis prone' condition for children suffering six or more episodes of otitis media before the age of six.⁵ Of his 'otitis prone' patients, 91% had their first AOM episode during the first year of life. Appelman found, in his study of children with recurrent AOM, that those under two years of age were more likely to follow an abnormal course of illness, defined as pain and/or fever after three days.⁶ Other authors report a higher recurrence rate and a higher rate of persistent middle ear effusion (MEE) in this age group.^{7–10} This is probably the reason why antibiotic therapy is prescribed more often in children under two years with AOM than in older children.² Whether this strategy is justified by an established increased efficacy is not known.

We systematically reviewed the available literature to determine the efficacy of antibiotic treatment for AOM in children under two years of age.

Method

We carried out a computer search using MEDLINE on articles published between 1966 and January 1997, and using EMBASE from 1974 until January 1997, using the following keywords: otitis media, child, clinical trial, and placebo. In addition, the reference sections of these articles, and of several major review articles, were checked for missing trials meeting the inclusion criteria. Furthermore, an extensive hand search for clinical trials of therapy for AOM in patients of all ages, performed by our group in 1991, was used.¹¹ An article was included when the following criteria were met:

- Random allocation to the different treatment groups.
- Comparison of antibiotic treatment with non-antibiotic treatment in AOM (not comparison of different antibiotics or different durations of treatment).
- Inclusion of children aged under two years, with separate presentation of the results for these young children.

The quality of the studies was assessed using the scoring system proposed by Chalmers *et al*.¹² The items included in this method are divided in four main categories (Box 1):

1. study protocol,
2. blinding procedures,
3. testing procedures, and
4. statistical analysis.

The items 'blinding of physicians and patients as to ongoing results' and 'multiple looks considered' were not considered in our analysis because no interim analyses were performed in the relatively short-term AOM trials. Because 'retrospective analysis' may be viewed as both a positive and a negative aspect of a

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Evidence Based Otitis Media

Stuart Barton



Evidence Based Otitis Media:

Evidence-based Otitis Media Richard M. Rosenfeld, Charles D. Bluestone, 2003 Evidence Based Otitis Media offers one stop shopping for the best current evidence to guide management decisions at the individual organizational and societal levels This text details the importance of evidence based data in interpreting the ever enlarging body of literature on otitis media The editors have assembled an impressive group of experts on all aspects of otitis media and addressed comprehensively many issues related to methodology clinical management and consequences of this disease The eight chapters comprising the methodology section provide the necessary background and detail to allow physicians and other health professionals to understand and appreciate the value of evidence based medicine Updates include the incorporation of new original research systemic reviews and evidence reports to existing chapters New chapter topics include evidence based medicine professional evidence reports molecular and translational research complementary and alternative medicine bacteriologic efficacy of antimicrobials vaccine prevention international management perspectives meta analysis of speech and language sequelae suppurative complications host susceptibility to sequelae and judicious use of systemic and topical antimicrobials FEATURES Maturation of evidence based medicine as a foundation for clinical care is reflected throughout the text Extensive evidence tables summarize study characteristics and quantitative outcomes for clinically relevant endpoints Internationally distinguished contributors selected based on both their clinical expertise and their ability to write for an evidence based text *Pediatric Otolaryngology* Ralph F. Wetmore, 2007-01-01 A core book for anyone who wishes to learn how to diagnose and refer and how to manage for the long term in pediatric ENT This book covers the critical topics of otitis media chronic sinusitis foreign bodies and sleep disordered breathing Otitis Media: State of the art concepts and treatment Diego Preciado, 2015-06-09 Otitis media OM is the most common diagnosis at medical visits in preschool age children and the literature suggests that as many as 80% of children will suffer from at least one episode Written by acknowledged experts this is a state of the art reference on the disease and controversies in the field Recent important advances in our understanding of predisposition to the disease and vaccine development are described and diagnostic best practices are presented Otitis Media State of the Art Concepts and Treatment is for any health care provider who works with children and their ability to diagnose and appropriately manage OM is therefore an essential skill The roles of antibiotics tympanostomy and surgery in the treatment of OM are carefully examined with discussion of the impact of guidelines and future directions Otitis Media State of the Art Concepts and Treatment is an invaluable source of up to date information for all involved in research into OM and its management **Evidence-based Pediatrics** William Feldman, 2000 Designed for busy clinicians delivering primary health care to children this is the first book to incorporate evidence based Pediatric diagnostic and therapeutic information Prevention diagnosis therapy and rehabilitation are all covered in depth The emphasis is on those problems both minor and major commonly seen in practice In addition the more rare but serious and life

threatening situations are also presented In one book the author has provided evidence based material on everything from well child care and management of upper respiratory infections to seizures and severe asthma Each chapter is contributed by an expert who has done the hard work of obtaining and evaluating the evidence needed to achieve optimal results Their content knowledge is superb and each has demonstrated expertise in the critical appraisal of evidence This is a relevant practical and up to date book that belongs on the shelf of every pediatrician and pediatric nurse practitioner *Recent Advances in Otitis Media* David J. Lim, 2005

Respiratory Infections Lionel Mandell, Mark Woodhead, Santiago Ewig, Antoni Torres, 2006-10-27 The aim of the volume is to provide an authoritative and international treatise bringing together current knowledge in the field of respiratory infection The book will be organised by presentation rather than causative organism a differentiating feature from the existing competition and will be divided into four parts General Issues Commun

Pediatric Otolaryngology Bluestone, 2014 Preceded by Pediatric otolaryngology edited by Charles D Bluestone et al 4th ed c2003

Ballenger's Otorhinolaryngology P. Ashley Wackym, James B. Snow, 2016 Preceded by Pediatric otolaryngology edited by Charles D Bluestone et al 4th ed c2003

Acute otitis media in children: treatment, follow-up and prevention Sics Editore, 2014-10-01 Treatment is based on careful diagnosis If acute otitis media AOM is only suspected antimicrobial drugs are not indicated Treatment is always individual antimicrobials will hasten recovery and relieve ear related symptoms but AOM can also resolve without antimicrobials

Infectious Diseases: Emergency Department Diagnosis & Management Ellen M. Slaven, Fred A. Lopez, Susan C. Stone, 2007 Publisher's Note Products purchased from Third Party sellers are not guaranteed by the publisher for quality authenticity or access to any online entitlements included with the product A Must Have reference for every emergency department and for every emergency department physician This is the first book on the diagnosis and management of infectious diseases as they present to the Emergency Department that's been written specifically for emergency physicians by emergency physicians These expert authors working in large urban Emergency Departments understand the importance of having an authoritative reference at the ready for fast diagnosis and treatment of infectious diseases occurring in all body systems The expert authors present Information selected and organized to meet the daily clinical needs of the emergency physician Case presentations in every chapter A Treatment Summary Box in each chapter with at a glance review of recommended drugs and dosages Considerations of special populations Full treatment of current issues in infectious disease bioterrorism Anthrax Smallpox Plague and Tularemia sexually transmitted diseases emerging infections West Nile Virus SARS Hanta Virus and Leptospirosis tick borne diseases fever in the returning traveler and immunizations Examination of HIV associated infections in various body systems Inclusion of TB associated infections influenza CAP and bronchitis and other lower respiratory tract infections A close look at central nervous system infections including meningitis and encephalitis Guidance for gastrointestinal infections such as hepatitis infectious diarrhea and more

Pediatric Clinical Practice Guidelines & Policies American

Academy of Pediatrics,2006 This evidence based decision making tool for managing common pediatric conditions has been revised and updated for 2006 with the latest clinical practice guidelines for more than 30 conditions plus every AAP policy statement clinical report and technical report through December 2005 Education to Improve Provider Knowledge and Usage of Evidence-based Guidelines for Acute Otitis Media in Children Asha Mathew,2018 Acute otitis media AOM is the most common reason children are prescribed antibiotics in the US While the evidence based practice EBP guidelines from the American Academy of Pediatrics and American Academy of Family Physicians provide guidance on the diagnosis and management of AOM adherence to the guidelines remains low and the overall use of antibiotics remains high The overprescribing of antibiotics and the use of broad spectrum antibiotics for AOM treatment contributes to the growing problem of antimicrobial resistance A comprehensive literature review showed that educational interventions increased provider knowledge and adherence to guidelines and reduced antibiotic use for the management of AOM This EBP project aimed to increase the knowledge levels of providers and improve provider intent to utilize the EBP guidelines for the diagnosis and management of AOM The target population was nurse practitioners and physician assistants working in retail clinics of a large organization in South Texas A total of eighteen providers participated in the project A self developed tool was used to measure the success of the educational intervention Participants completed a pretest education session and a posttest Additional education sessions were offered to the participants and a second posttest for retention of information was done after eight weeks The results showed that the knowledge levels of the providers increased by 43% in the first posttest and 56% in the second posttest while the benchmark was a 15% increase Similarly provider intent to utilize EBP guidelines increased by 33% more than the benchmark of 15% The success of this EBP change project makes it appropriate for practical use in nursing practice Key words acute otitis media antibiotics antimicrobial resistance educational intervention evidence based practice Abstract **The Journal of the American Osteopathic Association** ,2007 Clinical Evidence John Wiley & Sons, Limited,2003 A continually updated international source of the available evidence on the effects of common clinical interventions this text provides an account of the current state of knowledge ignorance and uncertainty about the prevention and treatment of a range of common clinical conditions **Clinical Evidence** Stuart Barton,2001-12 Clinical Evidence is a six monthly updated compendium of evidence on the effects of common clinical interventions It is published twice a year in print and online formats and draws together user friendly summaries of the best available evidence on prevention and treatment Features include choice of topics and questions guided by clinicians and patients summaries written by practising clinicians easy to follow numerical information guidance on applying evidence in practice and coverage of medical surgical nursing and complementary interventions Diagnosis and Treatment in Cases of Otitis Media (mastoid Disease). Charles Joseph Heath,1919 Essential Otolaryngology Keat Jin Lee,2003 Provides the most common diseases and disorders in the various areas of otolaryngology This work includes many tables and a bulleted text for quick reference of the

entire specialty **Otitis Media in Infants and Children** Charles D. Bluestone, Jerome O. Klein, 2001 The 3rd Edition of this authoritative reference brings together all of today's best knowledge about middle ear infections Clear and concise discussions of etiology and pathogenesis are paired with cutting edge techniques for diagnosis and both medical and surgical management Updates include new approaches for medical treatment and prevention in the face of today's antibiotic resistant bacterial pathogens discussions of new vaccines evaluations of alternative medical treatments and much more **Pediatric Annals** ,2004 Otitis Media with Effusion in Young Children Otitis Media Guideline Panel, 1994

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