POEMs

Patient-Oriented Evidence That Matters

Rates of Adverse Effects of Treatment for Otitis Media Vary by Antibiotic and Dose

Clinical Question

How often do children experience adverse effects from the antibiotics used to treat otitis media?

Bottom Line

The rates of diarrhea and rashes associated with the treatment of children with acute otitis media (AOM) vary depending on each specific antibiotic and its dosing. The rates of diarrhea and generalized rash were highest with amoxicillin/clavulanate (Augmentin) and high-dose amoxicillin, and lowest with azithromycin (Zithromax). (Level of Evidence = 2a–)

Synopsis

The authors searched Medline for published studies that reported the frequency of common adverse effects (e.g., diarrhea, generalized rash, diaper rash, Candida diaper dermatitis) associated with the use of amoxicillin, amoxicillin/clavulanate, azithromycin, cefdinir (Omnicef), and placebo in children treated for AOM. The authors included English-language randomized trials, cohort studies, and cross-sectional studies in which treatment lasted at least seven days (or five days in the case of azithromycin). The authors only included studies of amoxicillin/clavulanate that used a high dose (90/6.4 mg per kg per day) and studies of azithromycin that used a low dose (less than 10 mg per kg per day) because these are the only formulations currently available for AOM. The authors used narrow definitions of adverse effects. For example, they only included studies that used the word diarrhea and excluded those that used terms such as loose stools, stool changes, or gastrointestinal effects. Because of this, the rates they report are likely to be underestimates. They included 82 studies, most at high risk of bias. The number of children in the studies varied from 40 to 810. The authors correctly point out the inconsistent reporting of adverse effects across studies, resulting in heterogeneity.

Diarrhea was the most common adverse effect, but it ranged from 2.2% (azithromycin) to 18.9% (amoxicillin/clavulanate). The placebo caused diarrhea in approximately 7% of children, perhaps a reflection of underlying viral infections. In the three studies that used diaries, the rate of diarrhea was higher (14.6% to 21.1%). The rate of generalized rash varied from 1.4% (azithromycin) to 6.5% (high-dose amoxicillin; i.e., at least 80 mg per kg per day). Diaper rash occurred in 4.6% of children and varied up to 14.8% in children treated with amoxicillin/clavulanate. The rate of Candida diaper rash was only reported for two antibiotics: 3.3% for amoxicillin/clavulanate and 5.8% for low-dose amoxicillin (less than 80 mg per kg per day). This latter outcome is likely to be influenced by underreporting and by the authors' narrow definition.

Study design: Meta-analysis (other)

Funding source: Unknown/not stated

Setting: Various (meta-analysis)

Reference: *Hum SW, Shaikh KJ, Musa SS, et al. Adverse events of antibiotics used to treat acute otitis media in children: a systematic meta-analysis.* J Pediatr. *2019;215:139-143.e7.*

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