TREATMENT

Review: a short course of antibiotics is as effective as a long course for acute otitis media in children

Kozyrskyj AL, Hildes-Ripstein GE, Longstaffe SE, et al. *Treatment of acute otitis media with a shortened course of antibiotics. A meta-analysis.* JAMA 1998 Jun 3;279:1736-42.

Question

Is a short course of antibiotic treatment (<7 d) as effective as a long course of treatment (≥7 d) for acute otitis media (AOM) in children?

Data sources

Randomised controlled trials were identified by searching Medline (1966 to July 1997) using the terms otitis media (modified by the term acute), randomized controlled trials, random allocation, double-blind method, and single-blind method; Embase/Excerpta Medica (1974 to July 1997) using a similar search strategy; Current Contents (January to July 1997); and Science Citation Index. Bibliographies of relevant studies were also reviewed.

Study selection

Inclusion criteria were sample age 4 weeks to 18 years, clinical diagnosis of AOM and no antimicrobial treatment at the time of diagnosis, random allocation to antibiotic treatment for <7 days or ≥7 days, and assessment of clinical resolution of AOM. Trials were excluded if a surgical cointervention was planned (except for myringotomy after treatment failure or tympanocentesis).

Data extraction

2 authors independently extracted data on treatment site, patient baseline characteristics, cointerventions, inclusion and exclusion criteria, follow up, and outcomes. Main outcome was treatment failure, defined as lack of clinical resolution (ie, no improvement or resolution of presenting signs or symptoms) or relapse or recurrence of AOM within 31 days after initiation of treatment.

Main results

32 trials published in 29 reports were included in the analysis. 17 trials evaluated short acting oral antibiotics (amoxicillin, penicillin V potassium, cefaclor, cefpodoxime proxetil, cefixime, cefuroxime, and cefprozil); 4 trials evaluated intramuscular ceftriaxone sodium; and 11 trials evaluated oral azithromycin. Meta-analysis of 12 short acting antibiotic trials showed that children who had a short (5 d) course of treatment (n=1549) had more treatment failures at ≤1 month than children who had a long (8–10 d) course of treatment (n=1569) (odds ratio [OR] 1.38, 95% CI 1.15 to 1.66). Results were similar when outcomes were assessed at 8–19 days (OR 1.52, CI 1.17 to 1.98), but no differences were found when outcomes were assessed at 20–30 days (OR 1.22, CI 0.98 to 1.54), 31–40 days (OR 1.16, CI 0.87 to 1.55), or 90 days (OR 1.16, CI 0.65 to 2.06). Meta-analysis of 3 ceftriaxone trials (n=671) found no differences in treatment failure at ≤1 month (OR 1.25, CI 0.90 to 1.72) or at 3 months (OR 0.91, CI 0.57 to 1.47). Meta-analysis showed no difference in treatment failures for a short course (3 or 5 d) of azithromycin (n=1347) compared with a long course (10 d) of another antibiotic (n=1246) (OR 1.09, CI 0.86 to 1.38). No differences were found when outcomes were assessed at 10–14 days (OR 1.11, CI 0.82 to 1.51) or at 30 days (OR 1.02, CI 0.78 to 1.34).

Conclusion

In general, a short course of treatment with short acting antibiotics, ceftriaxone, or azithromycin is as effective as a long course of treatment for acute otitis media in children.

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Commentary

The meta-analysis of treatment of AOM with a shortened course of antibiotics by Kozyrskyj *et al* has important implications for clinical practice. AOM is one of the most common reasons for children to be seen by a primary care health provider. As the authors state, 65–95% of children will have had ≥1 episodes of AOM by age 7 years. The standard practice in North America is to prescribe a 7–10 day course of antibiotics.

Kozyrskyj *et al* paid careful attention to methods to reduce the potential for bias. They did a comprehensive search for relevant studies, assessed the studies in a blinded fashion by removing all identifying features of the published trials (eg, author names and sources of financial support), determined whether publication bias ex-

isted, and did sensitivity analyses to determine whether exclusion of trials of lower methodological quality changed the study results. This meta-analysis of 32 trials concludes that a 5 day course of antibiotics is generally as effective as a 10 day course for resolving AOM. There was a slightly increased rate of relapse of signs and symptoms when evaluated between 8 and 19 days; however, by 30 days after start of treatment, the shorter and longer courses of antibiotics had similar outcomes. The risk difference of 2.3% at 1 month means that 44 children would need to be treated with a long course of antibiotics to avoid 1 treatment failure after treatment with a short course of antibiotics.

These data will be of interest to all primary healthcare practitioners such as

nurse practitioners and physicians, as well as to emergency and paediatric nurses. The practice implications are that shorter courses of antibiotics may be indicated for children presenting with uncomplicated AOM. The benefits of a shortened course of antibiotics are that it may protect children from developing resistant micro-organisms, but still provide effective treatment of ear infections. Practitioners are searching for methods to reduce the amount of antibiotics prescribed because of the increase in the number of antibiotic resistant micro-organisms.

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