CRITICAL SUMMARIES

Short-term oral antibiotics may be as effective as the standard course of penicillin for children with acute streptococcal pharyngitis


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Systematic review conclusion. Three to 6 days of short-term late-generation antibiotics have comparable treatment efficacy as a 10-day course of oral penicillin in children with acute group A β-hemolytic streptococcus (GABHS) pharyngitis.

Critical summary assessment. On the basis of good evidence, the authors of this comprehensive systematic review suggest that short-term treatment with newer antibiotics may be as effective as the standard regimen of 10-day oral penicillin for treating acute streptococcal pharyngitis in children.

Evidence quality rating. Good.

Clinical question. In children with acute streptococcal pharyngitis, are short-term late-generation antibiotics as effective as longer term penicillin?

Review methods. Two authors searched 4 databases for articles published between October 1966 and April 2012. They included randomized controlled trials (RCTs) involving children aged 1 to 18 years who had documented acute streptococcal pharyngitis, on the basis of positive rapid antigen testing or positive throat swab culture for GABHS pharyngitis. They were treated with a short duration (2-6 days) of newer generation oral antibiotics or a control of 10 days of oral penicillin, the recommended standard of care. Two authors independently selected studies, extracted data, and assessed the risk of bias and publication bias. The authors calculated the interrater agreement and resolved disagreements by consensus. They assigned study participants into 1 of 5 subgroups in which the participants received one of the following treatments: azithromycin, 10 milligrams per kilogram of body weight; azithromycin, 20 mg/kg; clarithromycin; cefuroxime; and other antibiotics. The investigators did not perform a sensitivity analysis. The primary outcome was the number of days required to resolve the study participants’ fever and sore throat. Among the 9 secondary outcomes were clinical and bacteriologic treatment failure, recurrence rate, and rate of complications (for example, glomerulonephritis and acute rheumatic fever). The authors tested for heterogeneity.

Main results. The authors included 20 RCTs with 13,102 cases of acute GABHS pharyngitis and 14 antibiotic regimens. Most of the studies were published from 1994 to 2004, during which rates of serious complications like acute rheumatic fever were less common than they have become in the past decade. The investigators of only 3 of 20 studies followed the 8,135 participants for a sufficient duration to be able to study the prevalence of complications of acute GABHS pharyngitis. Patients in the short-duration treatment studies had shorter periods of fever (mean difference [MD], −0.30 days; 95% confidence interval [CI], −0.45 to −0.14) and throat soreness (MD, −0.50 days; 95% CI, −0.78 to −0.22) compared with patients who received standard-duration treatment. The patients who received short-duration treatment also had lower risk of early clinical treatment failure (odds ratio [OR], 0.80; 95% CI, 0.67-0.94) and no significant difference in early bacteriologic treatment failure (OR, 1.08; 95% CI, 0.97-1.20) or late clinical recurrence (OR, 0.95; 95% CI, 1.16-1.48) than did patients who received standard-duration treatment. Of 8,135 cases of acute GABHS pharyngitis, only 6 patients who received the short-duration treatment versus 8 patients who received the
standard-duration treatment developed long-term complications in the form of glomerulonephritis or acute rheumatic fever, with no statistically significant difference (OR, 0.53; 95% CI, 0.17-1.64). Low-dose azithromycin (10 mg/kg per day) was inferior to other antibiotic regimens regarding the eradication of bacteria. **Conclusions.** Three to 6 days of oral antibiotics had comparable efficacy with the standard-duration 10-day course of oral penicillin in treating children with acute GABHS pharyngitis. The authors made no comparisons of the complication rates for acute rheumatic fever and acute poststreptococcal glomerulonephritis owing to their infrequent occurrences.

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**COMMENTARY**

**Importance and context.** A long-duration course of antibiotics has variable patient compliance because symptoms often improve within 24 to 48 hours after starting the medication. Patient motivation diminishes after 3 days, and patients may not complete the recommended 10-day duration of penicillin. Greater convenience to patients may lead to improved compliance and reduced failure rate with decreased complications.

**Strengths and weaknesses of the systematic review.** The authors of this systematic review performed appropriate searches, study selection, data extraction, analyses, risk-of-bias assessments, and heterogeneity assessments. They conducted a meta-analysis using the fixed-effects model. The authors factored in the scientific quality of the studies when they formulated conclusions. They deemed a sensitivity analysis to be unnecessary.

**Strengths and weaknesses of the evidence.** The authors included RCTs involving children aged 1 to 18 years. The investigators of only 3 of the included studies used masked assessment or assignment. Although most of the results were consistent across the studies, the investigators of most studies used un concealed randomization. The outcomes measured were surrogate measures (that is, the number of days to fever resolution) versus patient-oriented outcomes. A significant number of studies had a high risk of selection bias, performance bias, detection bias, and attrition bias. The results of the studies did not achieve enough power to make any conclusions regarding the comparison of complication rates of acute rheumatic fever and acute poststreptococcal glomerulonephritis. Substantial heterogeneity was evident from the use of multiple antibiotic regimens and different treatment durations.

**Implications for dental practice.** Short-duration treatment with newer-generation antibiotics for GABHS pharyngitis appears to have comparable effectiveness with the longer 10-day course of treatment with oral penicillin. The shorter duration of treatment can improve compliance; however, the antibiotics are more expensive. If azithromycin is chosen for a short duration of 3 days, the results of this systematic review indicated that a dose of 20 mg/kg per day was superior to a low dose of 10 mg/kg per day. In locations that have high prevalence rates of acute rheumatic fever and acute poststreptococcal glomerulonephritis, the authors suggest using caution with prescribing short-duration regimens until there is stronger supporting evidence. The authors of a Cochrane review published in 2013 evaluated different types of antibiotics for the treatment of GABHS tonsillopharyngitis, and they concluded that penicillin still can be recommended as a first choice owing to its low cost and absence of resistance. Future research to evaluate the efficacy of short-duration oral penicillin would be useful.

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