Are antibiotics helpful for acute maxillary sinusitis?

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EVIDENCE-BASED ANSWER

The inability of clinical criteria to accurately differentiate bacterial from viral disease makes routine use of antibiotics inappropriate for clinically diagnosed maxillary sinusitis (strength of recommendation [SOR]: C, based on inconsistent systematic reviews and randomized controlled trials).

Antibiotics can provide symptomatic relief, best demonstrated in patients with bacterial maxillary sinusitis confirmed by computed tomography (CT) or sinus aspiration (SOR: A, based on 1 systematic review). However, this benefit does not persist in trials that better reflect general practice by using clinical diagnostic criteria (SOR: C, inconsistent studies).

In trials showing improvement with antibiotics, symptoms decrease, at best, 2 to 3 days sooner than with placebo, and, regardless of treatment, at least two thirds of patients are improved in 14 days (SOR: A, based on multiple systematic reviews).1

No evidence suggests that antibiotics decrease complication rates. Newer broad-spectrum antibiotics are no better at relieving symptoms or improving cure rates than “firstline” agents such as amoxicillin (SOR: A, based on multiple randomized controlled trials).2,3

EVIDENCE SUMMARY

Nearly all trials comparing placebo with antibiotics for maxillary sinusitis are confounded by the difficulty in identifying true bacterial disease. The gold standard, sinus aspiration, offers the best diagnostic accuracy. CT scanning and plain radiography lack sufficient diagnostic accuracy to be useful alone, though CT scans offer better sensitivity.

One systematic review, limited to randomized controlled trials that required either radiographic or aspiration
evidence of sinusitis, found penicillin superior to placebo, but all patients recovered in a few weeks regardless of treatment. Given that radiographs have poor diagnostic accuracy and that sinus aspiration is impractical in outpatient practice, such efficacy studies are less meaningful than effectiveness studies that use clinical criteria for study entry and outcome measurement.

No accurate clinical diagnostic criteria have been established. In ear, nose, and throat practices where bacterial sinusitis prevalence is high, clinical criteria identify only 70%–80% of cases compared with the sinus aspiration. In general practice, where the pretest probability of bacterial disease is far lower, clinical criteria are even less reliable, which confounds the interpretation of most clinical trials.

Accordingly, some placebo-controlled, primary-care–based clinical trials have shown symptomatic benefit of antibiotics for maxillary sinusitis while others have shown no benefit whatsoever. In those trials that demonstrated a significant difference, antibiotics were always more likely than placebo to cause side effects, and no control group fared worse than its matched antibiotic group by the end of a follow-up period of at least 25 days.

It is likely that antibiotics would be more useful if the subgroup of patients with bacterial disease could be accurately identified in outpatient practice. For the present, given that no such reliable criteria exist, that withholding antibiotics in these patients appears to be safe, and that antibiotic overuse has clear harm to individuals and society, sinusitis symptoms should be treated without antibiotics until the clinical course strongly suggests nonviral illness.

**RECOMMENDATIONS FROM OTHERS**

An evidence report from the Agency for Health Care Policy and Research recommends “initial symptomatic treatment or the use of clinical criteria to guide treatment.” The American Academy of Family Physicians “recognizes inappropriate use of antibiotics as a risk to both personal and public health and encourages only the appropriate use of these medications,” but has not published sinusitis guidelines. The Centers for Disease Control and most authorities suggest that bacterial disease can be inferred in those with signs or symptoms that suggest bacterial rather than viral illness (eg, overall duration of symptoms, so-called “double-sickening,” unilateral symptoms) and justify use of antibiotics in these patients.

**CLINICAL COMMENTARY**

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The challenge in using antibiotics appropriately for acute maxillary sinusitis is in our inability to accurately determine bacterial vs viral causes based on clinical symptoms alone. Symptoms lasting <1 week are unlikely to be bacterial in origin. Patients without persistent purulent discharge and maxillary/facial tenderness or tooth pain are unlikely to have a bacterial infection.

The key point: most patients will improve with or without antibiotic treatment. Withholding
antibiotics does not increase the risk of developing complications. Balancing this against the potential for increasing antibiotic resistance should lead to prudent use. Antibiotics should be reserved for patients with severe or prolonged symptoms. Amoxicillin, doxycycline, and trimethoprim-sulfamethoxazole are efficacious and inexpensive initial options if therapy is warranted.

REFERENCES

12. Van Buchem FL, Knoottnerus JA, Schrijnemaekers VJ, Peeters MF. Primary-care-
