

Acute sinusitis, antibiotics, and the Holy Grail

John Hickner, MD, MSc

The University of Chicago Pritzker School of Medicine

In 1998 the *British Journal of General Practice* published a study by W. Stallman¹ entitled “The end of antibiotic treatment in adults with acute sinusitis-like complaints in general practice?” In this Dutch randomized trial, doxycycline was no more effective than placebo for clinically diagnosed acute sinusitis. Stallman’s trial was unique, because the diagnosis of acute sinusitis was based on clinical findings rather than x-rays, computed tomography (CT) scans, or sinus puncture and culture—the gold standard for diagnosing bacterial sinusitis. He based the diagnosis on clinical findings because that is how we practice in family medicine. We rarely use x-rays and CT scans to diagnose sinusitis. X-ray findings are not all that accurate,² and CT scans are expensive, not immediately available, and should be reserved for difficult cases.

Since Stallman’s study, 2 more randomized placebo-controlled trials of antibiotic treatment for sinusitis-like symptoms in general practice—one of amoxicillin and the other of amoxicillin-clavulanate—found no benefit.^{3,4} Even for patients with “x-ray confirmed” acute sinusitis in general practice, a randomized trial showed no benefit for amoxicillin.⁵

In this issue of *THE JOURNAL OF FAMILY PRACTICE*, Merenstein et al⁶ report the results of a similar randomized trial of clinically diagnosed sinusitis in primary care, showing once again that antibiotics are not very effective for treating sinusitis-

like symptoms, even for patients who have had symptoms for at least 7 days. At 14 days follow-up, 32 (48%) of the amoxicillin group vs 25 (37%) of the placebo group were cured, a nonsignificant difference. Even assuming that this 11% absolute difference was statistically significant—which might have occurred with a larger study—the number needed to treat would be 9. That is a lot of unnecessary antibiotic prescribing. Most readers of *JFP* will be familiar with the reason for the disappointing outcome of Merenstein’s and others sinusitis antibiotic treatment trials in primary care. That is, most cases of clinically diagnosed acute sinusitis are caused by viruses and do not respond to antibiotics. Furthermore, there is no reliable way clinically to distinguish viral from bacterial sinus infection; there is too much overlap in symptoms.

We now have 5 good placebo-controlled randomized trials of antibiotic treatment of clinically diagnosed acute sinusitis, all with negative results. This approaches “A” level of evidence. Is it time we “just say no” to treating sinusitis-like complaints with antibiotics? Was Stallman right? Is this the end of the story? Not quite, in my opinion.

For the most part, I agree that being stingy with antibiotics for patients with sinusitis-like complaints is a good thing, especially patients with mild symptoms. Most patients will have viral infections and will recover as quickly with symptomatic treatment. But we know that some

patients we see do have acute bacterial sinusitis and will benefit from an antibiotic. We just don't know who they are. On average, patients with acute sinusitis and air-fluid levels on CT scan improve more quickly with antibiotics.⁷ This point brings me back to the Merenstein study. The investigators noted that, despite similar cure rates at 14 days, the amoxicillin group improved more rapidly, and the time to complete improvement for those who fully recovered by 14 days was 8.1 days for the amoxicillin group and 10.7 days for the placebo group. This suggests to me there are "antibiotic responsive" cases buried in the group of patients in this study. I can't get too excited about this, however, because patients' average symptom severity ratings at 3, 7, and 14 days were not significantly different in the amoxicillin and placebo groups (as noted in Merenstein's Table 2) Nonetheless, it is not yet time to give up the search for identifying "antibiotic responsive" acute sinusitis.

Here is another piece of evidence to support this assertion. Hansen found that patients with a clinical diagnosis of acute sinusitis who had significant facial pain did benefit from penicillin.⁸ As soon as 3 days after treatment started, pain was significantly diminished in the penicillin treated group compared with placebo.

What we really need is a reliable, easy, and inexpensive point-of-care test to distinguish viral from bacterial sinusitis—the "strep screen" for acute sinusitis. That test is the Holy Grail of acute sinusitis treatment. CT scans are too expensive, and plain x-rays and sinus transillumination are not accurate enough.² The Europeans have had limited success with C-reactive protein, but the predictive value is not terrific. I expect that a clever microbiologist will eventually discover the right test. Then we can target antibiotic treatment to those who will really benefit.

In the meantime, I recommend following the CDC principles of appropriate antibiotic use for acute rhinosinusitis.⁹ Temporize at least a week for those who are not that ill, treat pain, and do not hesitate to use an antibiotic for those with

more severe, classical symptoms of acute bacterial sinusitis—maxillary pain and purulent (not green or yellow) nasal discharge. Despite concerns about antibiotic resistance, amoxicillin is still a good initial choice, reserving broad-spectrum antibiotics for resistant cases. *JFP* has published 3 "Clinical Inquires" that nicely summarize the current scientific evidence for diagnosis and treatment of acute sinusitis.^{10,11,12}

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