

Antibiotics for Acute Sinusitis

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Clinical scenario: A 35 year old white female with no significant past medical history presents with the complaint of feeling ill with purulent nasal drainage, and facial headache for the past two weeks and has maxillary sinus tenderness on exam.

Clinical Question: Among adults with acute sinusitis, does giving antibiotics vs. no antibiotic therapy, result in clinical cure or reduction in symptoms?

Articles:

Ahovuo-Saloranta, A., Borisenko, O., Kovanen, N., Varonen, H., Rautakorpi, U., William, J., Mäkelä, M. (2009). Antibiotics for acute maxillary sinusitis. *Cochrane Database of Systematic Reviews* 2008, Issue 2

Falagas, M., Giannopoulou K., Vardakas, K., Dimopoulos, G., Karageorgopoulos, D. (2008). Comparison of antibiotics with placebo for treatment of acute sinusitis: a meta-analysis of randomised controlled trials. *The Lancet Infectious Diseases*, 8, (9).

Summary and Appraisal of Key Evidence:

The two articles appraised compared the use of antibiotics vs. placebo in the treatment for acute sinusitis. The study conducted by Ahovuo_Saloranta et al. (2009) was a meta-analysis of randomized controlled trials that provided Level 1 Grade A level of evidence; and the study conducted by Falagas et al. (2008) was a Systematic Review providing Level 1 Grade A level of evidence. Ahovuo, Saloranta et al. (2009) included a literature review of 17 trials (3 involving children) with sample size of 6,424 participants and the Systematic Review involved 57 trials with a sample size of 631 participants. The meta-analysis review, gathered data from the PubMed database (from JULY, 1965 to January, 2007), Scopus database and hand-searched bibliographies to identify relevant randomized controlled trials. The Systemic Review, gathered data from the Cochrane Central Register of Controlled Trials (the Cochrane Library, 2007) and Medline (1950- May of 2007). Clinical trials selected from both reviews were trials that compared treatment with any antibiotic versus placebo for patients of any age with acute sinusitis

of any location. Both reviews included trials with patients that were clinically diagnosed with acute sinusitis, whether or not confirmed by radiography or bacterial culture. The primary effectiveness outcome of the meta-analysis was cure or improvement, between 7-15 days from the beginning of treatment, in clinically assessable patients. Secondary effectiveness outcomes included cure alone, time to resolution of symptoms, complication, and recurrence. Primary and secondary outcomes of the systematic review include clinical failure rate at 7 to 15 days after the start of treatment and clinical failure rate at 16 to 60 days after the start of treatment. Other secondary outcomes include bacteriological failure, radiographic failure, relapse rates; new acute episodes of sinusitis after 60 days from the start of the initial treatment, drop-outs due to adverse effects, quality of life and the ability to work.

Both studies found that antibiotics for acute maxillary sinusitis, were associated with a slightly higher rate of cure or improvement or cure alone, compared to a placebo. However, antibiotics given to patients with acute sinusitis were found to be associated with a higher incidence of adverse events compared with placebo. The Ahovuo, Saloranta et al. (2009) study also found that there is evidence to support the use of ancillary therapies (topical decongestants, nasal corticosteroids, antihistamines, saline irrigation and analgesics) for symptomatic relief of sinonasal symptoms.

Some strengths of the Ahovuo, Saloranta et al. (2009) study was the high level of evidence provided, validity of diagnostic tools, the number of years assessed, randomization, limited bias, fairly large sample size and number of trials reviewed (which leads to more variables and outcomes examined). Weaknesses of the study include no theoretical framework, heterogeneity was substantial. Strengths of Falagas et al. (2008) included a narrow focus of the question, the comprehensive search for evidence, the criterion-based selection of relevant evidence, the appraisal of validity, the quantitative summary, and evidence-based inferences. Weaknesses included no theoretical framework and some risk for bias. Opportunities of the appraised studies included profession education on the efficacy of antibiotic therapy during times of antibiotic overuse. Threats of the appraised studies included, the expectations of patients and the belief that antibiotics are always needed to effectively treat acute sinusitis.

Critical Bottom Line:

The two different studies appraised, provided high levels of evidence, Level 1 Grade A. Overall, acute maxillary sinusitis had a relatively benign clinical course. There is valid evidence to suggest that the use of antibiotics results in a slightly higher cure rate than a placebo. Data also supported the findings that about 80% of all patients report no or few symptoms after two weeks with a placebo and symptomatic treatment. Patients treated with antibiotics are more likely to have a side-effect in comparison to placebo than they are to have an improvement or a cure in comparison to placebo.

I feel that the results of the studies will help guide me in my practice as I treat patients with acute sinusitis. Overuse of antibiotics is becoming a huge problem and is a major reason why there is an increase in antibiotic resistance to bacterial pathogens. As clinicians, I feel that we

need to weigh the small benefits of antibiotic treatment against the potential for adverse effects at both the individual and general population level. Offering education about acute sinusitis as well as providing nonpharmacological therapies may offer additional symptomatic relief. Antibiotics should be reserved for those patients with a higher probability for bacterial disease.

References

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