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Q/ Do antibiotics shorten symptoms in patients with purulent nasal discharge?

EVIDENCE-BASED ANSWER

A/ NO. For most patients with purulent nasal discharge, antibiotics don't decrease symptom duration; they do increase adverse events (strength of recommendation [SOR]: **A**, 3 meta-analyses and 2 randomized controlled trials [RCTs]).

Researchers in the field don't recommend using antibiotics as routine treatment for purulent rhinorrhea associated with symptoms of upper respiratory infection ([SOR]: **C**, expert opinion).

Evidence summary

A Cochrane review of antibiotics for the common cold that included 5 RCTs with a total of 772 participants with purulent nasal discharge found no benefit from antibiotics.[1] The relative risk (RR) for persistent acute purulent rhinitis with antibiotics compared with placebo was 0.63 (95% confidence interval [CI], 0.38-1.07; *P*=.087). The antibiotic groups showed an increase in adverse effects, with an RR of 1.46 (95% CI, 1.01-1.94; *P*=.047).

Benefits of antibiotics tempered by adverse effects

A meta-analysis of 6 RCTs with more than 1400 subjects showed persistent nasal discharge at 5 to 8 days, on average, in 23% of patients who received antibiotics compared with 46% of patients who received placebo (RR of benefits=1.18; 95% CI, 1.05-1.33; *P*=.05).[2] Most subjects were between 12 and 50 years of age; 2 of the trials included children between 2 months and 16 years of age. All subjects had symptoms for fewer than 10 days.

The adverse effects of antibiotic treatment, primarily rash and diarrhea, were also addressed (RR of adverse effects=1.46; 95% CI, 1.10-1.94; *P*=.028). Given the overlap of the number needed to treat (7-15) and number needed to harm (12-78), the authors concluded that most patients get better without antibiotics, supporting "no antibiotic as first line" treatment advice.

Other studies show minimal benefit for antibiotics

A meta-analysis of 9 placebo-controlled RCTs (2640 adult subjects with rhinosinusitis-like complaints) found that antibiotics provided minimal benefit. For patients with visible purulent drainage in the pharynx, the NNT overlapped with the NNH; patients without visible purulent discharge showed even less benefit from antibiotics.[3]

Clinical improvement is insufficient to recommend antibiotic treatment

Three double-blinded RCTs studied patients older than 12 years who presented to a family practice clinic complaining of purulent rhinitis.[4-6] All 3 studies compared amoxicillin treatment with placebo; outcomes were based primarily on patient diaries that recorded symptoms, including nasal discharge.

The first study randomized 135 patients to either amoxicillin (n=67) or placebo (n=68)

for 10 days.[4] At the end of 2 weeks, both groups had similar rates of symptom improvement—although in a subgroup of 57 patients who had complete symptom resolution at 2 weeks, the median number of days until resolution of purulent nasal discharge was 8 in the amoxicillin group compared with 12 days for the placebo group (P=.039). The authors could not identify clinical characteristics favoring antibiotic treatment.

In the second study, 207 patients received amoxicillin and 209 placebo.[5] After 10 days of therapy, symptom resolution rates were not significantly different (35% for amoxicillin vs 29% for placebo). However, patients in the amoxicillin group had quicker resolution of purulent nasal discharge (9 vs 14 days for 75% of patients to be free of that symptom; P=.007).[5]

The third study (240 adults) didn't find a significant decrease in duration of purulent nasal discharge in the antibiotic group compared with the placebo group.[6]

Despite the findings of decreased duration of purulent nasal discharge in the first 2 studies, the authors of all 3 studies concluded that the clinical difference in improvement between antibiotic and placebo groups was not enough to recommend treatment with antibiotics. Although the trials didn't measure adverse outcomes, the authors advised clinicians to consider the potential for adverse reactions before recommending antibiotic treatment.

Recommendations

Both the American Academy of Otolaryngology and the American Academy of Allergy, Asthma, and Immunology recommend watchful waiting without antibiotics for acute sinusitis with mild pain or temperature lower than 101°F and consideration of antibiotics only if symptoms worsen or fail to improve by 7 days after diagnosis. Neither group offers specific recommendations regarding patients with purulent discharge.[7,8]

The Centers for Disease Control and Prevention recommend reserving antibiotic treatment of acute bacterial rhinosinusitis for patients with symptoms lasting longer than 7 days and patients who have unilateral symptoms with purulent nasal discharge.[9] JFP

For most patients with purulent nasal discharge, antibiotics don't shorten symptom duration.

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