

Review: antibiotics reduce the rate of clinical failure in children with persistent nasal discharge

Morris P, Leach A. *Antibiotics for persistent nasal discharge (rhinosinusitis) in children (Cochrane Review)*. *Cochrane Database Syst Rev* 2002;(4):CD001094 (latest version Feb 27, 2002).

QUESTION: In children with persistent nasal discharge (rhinosinusitis) for ≥ 10 days, are antibiotics more effective than placebo or standard treatment for reducing the rate of overall clinical failure?

Data sources

Studies were identified by searching the Cochrane Controlled Trials Register, Medline (1999–2002), and EMBASE/Excerpta Medica (1997–2002). Bibliographies of relevant articles were reviewed and experts in the field and major pharmaceutical companies (with offices in Australia) were contacted for unpublished studies.

Study selection

Studies were selected if they were randomised controlled trials (RCTs) comparing antibiotics (effective against *Streptococcus pneumoniae* and non-capsular *Haemophilus influenzae*) with placebo or standard treatment (decongestants or nasal saline drops) (control group), and patients were children < 18 years of age with nasal discharge that had persisted for ≥ 10 days

Data extraction

Data were extracted on study setting, sample size, details of the intervention, side effects of the treatment, study quality, and outcomes. The main outcome was overall clinical failure (patients with nasal discharge at follow up [failure to cure], or patients with no substantial improvement [failure to improve] if failure to cure rates were not available). Secondary outcomes included failure to cure, failure to improve, complications (progression of disease resulting in additional medical treatment), and side effects.

Main results

6 RCTs (562 children) met the selection criteria. Comparisons included antibiotics with a placebo of similar appearance (3 RCTs), antibiotics with saline nasal drops (1 RCT), antibiotics with decongestants (1 RCT), and antibiotics plus decongestants with decongestants (1 RCT). Antibiotics evaluated included amoxicillin, amoxicillin-clavulanate, erythromycin, and trimethoprim-sulphamethoxazole. Meta-analyses used a fixed effects model. The rate of overall clinical failure

was lower for antibiotics than control (table). The rates of failure to cure, failure to improve, and complications were lower for antibiotics than control (table). The groups did not differ for side effects (table).

Conclusion

In children with persistent nasal discharge (rhinosinusitis) for ≥ 10 days, antibiotics are more effective than placebo or standard treatment for reducing the rate of clinical failure.

Sources of funding: National Health and Medical Research Council and Acute Respiratory Infection Cochrane Review Group.

For correspondence: Dr P Morris, Menzies School of Health Research, Darwin, Northern Territory, Australia. peterm@menzies.edu.au

COMMENTARY

Nasal discharge or rhinosinusitis is common in children. It can be of varied aetiology, chronic (> 12 wks duration), clear in color, or purulent. If left untreated, it can lead to complications of the nose or orbit¹⁻² in a small proportion of cases. A uniform clinical practice pattern for its treatment or a consensus on use of antibiotics does not exist. Recently, evidence from small, non-randomised studies favoured use of saline irrigation as an adjunct treatment.³ The review by Morris and Leach assessed the effectiveness of antibiotics in its treatment.

Data from 6 RCTs involving 562 children from developed countries were pooled. The sample included a good mix of patients with a radiologically confirmed and unconfirmed diagnosis, those with and without allergy, and those with and without purulent discharge, thus making the results generalisable. Treatment with antibiotics reduced overall clinical failure, or non-resolution of nasal discharge, by 25% when compared with a mean control event rate of 46%. Therefore, 9 children with rhinosinusitis have to be treated with antibiotics to prevent 1 clinical failure.

Although only RCTs were selected, the blinding procedures were fair, and loss to follow up occurred to a maximum of about one third. Results of mid and long term follow up were not available.

Children with nasal discharge for > 10 days are likely to be symptomatically relieved if treated with antibiotics for ≥ 10 days. However, further studies in developed and developing countries, with long term follow up and documentation of antibiotic side effects and of emergence of antimicrobial resistance are still required.

Shally Awasthi, MD
King George Medical College
Lucknow, Uttar Pradesh, India

- Mitchell R, Kelly J, Wagner J. Bilateral orbital complications of pediatric rhinosinusitis. *Arch Otolaryngol Head Neck Surg* 2002;**128**:971–4.
- Grevers G, Klemens A. [Complications of rhinosinusitis]. *MMW Fortschr Med* 2002;**144**:36–8.
- Papsin B, McTavish A. Saline nasal irrigation: Its role as an adjunct treatment. *Can Fam Physician* 2003;**49**:168–73.

*Antibiotics v placebo or standard treatment (control) in children with persistent nasal discharge for ≥ 10 days**

Outcomes at 2-6 weeks	Number of RCTs (patients)	Weighted event rates			
		Antibiotics	Control	RRR (95% CI)	NNT (CI)
Overall clinical failure	6 (562)	34%	46%	25% (8 to 39)	9 (5 to 34)
Failure to cure	5 (401)	40%	56%	28% (11 to 41)	7 (4 to 20)
Failure to improve	3 (350)	24%	39%	27% (15 to 54)	7 (4 to 20)
Complications	2 (284)	3.6%	12%	66% (12 to 86)	Not significant
				RRR (CI)	NNH
Side effects	4 (469)	5.9%	2.9%	75% (-37 to 382)	Not significant

*RCTs = randomised controlled trials. Other abbreviations defined in glossary; RRR, RRI, NNT, NNH and CI calculated from data in article using a fixed effects model.