

Pharmacologic Therapy for Eustachian Tube Dysfunction

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Clinical Question

Are there any effective pharmacologic therapies for eustachian tube dysfunction?

Evidence-Based Answer

There are no medications that improve patient-oriented outcomes in children or adults with eustachian tube dysfunction. (Strength of Recommendation [SOR]: A, based on a systematic review of randomized controlled trials [RCTs].) Oral corticosteroids, with or without antibiotics, improve pneumatic otoscopy and tympanometry findings in the short term, but these agents have no long-term benefit. (SOR: A, based on a systematic review of RCTs.)

Evidence Summary

Otitis media with effusion (OME) is often associated with eustachian tube dysfunction. Few studies have evaluated patient-oriented outcomes in the treatment of eustachian tube dysfunction. Most studies used tympanometry, with or without pneumatic otoscopy, for diagnosis and to measure outcomes.

ORAL CORTICOSTEROIDS

A Cochrane review of three RCTs that included 108 children six months to 15 years of age found that oral corticosteroids in varying types and dosages improved OME for the first month of therapy (relative risk [RR] = 4.48; 95% confidence interval [CI], 1.52 to 13.23).¹ One study of 44 children found no improvement in hearing in those receiving oral corticosteroids compared with the placebo group (RR = 1.09; 95% CI, 0.80 to 1.49).² Five RCTs that included 409 children found that oral corticosteroids plus antibiotics improved rates of OME resolution at less than one month compared with placebo plus an antibiotic (RR = 1.99; 95%

CI, 1.14 to 3.49).¹ One study of 99 children found no improvement in hearing in those receiving oral corticosteroids (RR = 1.01; 95% CI, 0.73 to 1.40).³ In all studies included in the Cochrane review, the benefits of corticosteroids did not persist beyond four weeks.

NASAL CORTICOSTEROIDS

Nasal corticosteroids have not demonstrated short- or long-term benefits in the resolution of OME or improvement in hearing. One study of 200 children randomized to daily mometasone (Nasonex) or placebo found no difference in the number of days with hearing loss after three months of therapy (95% CI, -4.51 to 4.51).⁴ After nine months of follow-up, there was still no benefit in the treatment group. A three-week study of 44 children randomized to placebo or dexamethasone nasal spray found no difference in resolution of OME, but did not evaluate hearing (RR = 0.64; 95% CI, 0.31 to 1.31).⁵ One RCT evaluating beclomethasone (Beconase AQ) plus amoxicillin vs. placebo plus amoxicillin in 53 children found no benefit in resolution of OME in the group that received corticosteroids (RR = 1.26; 95% CI, 0.54 to 2.96).⁶

An RCT including 91 participants with OME (mean age, 42 years) found that triamcinolone nasal spray (Nasacort) was no better than placebo for improving tympanometry findings (22% vs. 35%; $P = .15$) or symptoms such as deafness and blocked or popping ears ($P = .27$).⁷ Analysis of a subgroup of children found a similar lack of effectiveness.

DECONGESTANTS AND ANTIHISTAMINES

A systematic review of 16 RCTs (1,880 participants younger than 18 years) evaluating first-generation antihistamines and decongestants (pseudoephedrine, phenylephrine, and ►

phenylpropanolamine) alone or in combination found no clinically or statistically significant improvement in hearing or OME persistence with the active treatments compared with placebo.⁸ The treatment groups had more adverse effects; irritability, sedation, and gastrointestinal upset were the most common (number needed to harm = 9).

Recommendations from Others

UpToDate recommends treatment of the underlying cause of eustachian tube dysfunction and states that systemic decongestants may be helpful in isolated cases.⁹

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REFERENCES

1. Simpson SA, Lewis R, van der Voort J, Butler CC. Oral or topical nasal steroids for hearing loss associated with otitis media with effusion in children. *Cochrane Database Syst Rev*. 2011;(5):CD001935.
2. Macknin ML, Jones PK. Oral dexamethasone for treatment of persistent middle ear effusion. *Pediatrics*. 1985;75(2):329-335.
3. Podoshin L, Fradis M, Ben-David Y, Faraggi D. The efficacy of oral steroids in the treatment of persistent otitis media with effusion. *Arch Otolaryngol Head Neck Surg*. 1990;116(12):1404-1406.
4. Williamson I, Bengt S, Barton S, et al. A double-blind randomised placebo-controlled trial of topical intranasal corticosteroids in 4- to 11-year-old children with persistent bilateral otitis media with effusion in primary care. *Health Technol Assess*. 2009;13(37):1-144.
5. Shapiro GG, Bierman CW, Furukawa CT, et al. Treatment of persistent eustachian tube dysfunction in children with aerosolized nasal dexamethasone phosphate versus placebo. *Ann Allergy*. 1982;49(2):81-85.
6. Tracy JM, Demain JG, Hoffman KM, Goetz DW. Intranasal beclomethasone as an adjunct to treatment of chronic middle ear effusion. *Ann Allergy Asthma Immunol*. 1998;80(2):198-206.
7. Gluth MB, McDonald DR, Weaver AL, Bauch CD, Beatty CW, Orvidas LJ. Management of eustachian tube dysfunction with nasal steroid spray: a prospective, randomized, placebo-controlled trial. *Arch Otolaryngol Head Neck Surg*. 2011;137(5):449-455.
8. Griffin G, Flynn CA. Antihistamines and/or decongestants for otitis media with effusion (OME) in children. *Cochrane Database Syst Rev*. 2011;(9):CD003423.
9. Poe D, Hanna BM. Eustachian tube dysfunction. http://www.uptodate.com/contents/eustachian-tube-dysfunction?source=search_result&search=eustachian+tube+dysfunction&selectedTitle=1%7E30. Accessed December 5, 2012. ■