Management of granular myringitis: a systematic review
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CRD summary
The review concludes that dilute vinegar solution should be considered over conventional antibiotic drops for the treatment of granular myringitis. The conclusion is based on just two small poorly designed studies and may not be reliable.

Authors' objectives
To establish optimal management and intervention strategies for granular myringitis.

Searching
Databases searched between 1964 and 2005: Cochrane Database of Systematic Reviews, DARE, Cochrane Controlled Trials Register and MEDLINE. Other electronic resources searched: BMJ journals, various journal websites, citation indices and general internet searches. Current journals (not named) were handsearched for recent publications. ‘Grey area’ search engines were used (no details given). Retrieved reference lists and textbooks were scanned for additional papers. Some of the search terms used were reported.

Study selection
Randomised controlled trials (RCTs), controlled case studies and observational studies of any management or treatment strategy for adults with granular myringitis were eligible for inclusion in the review. Eligible studies had to include at least 20 patients with a clinical diagnosis of granular myringitis based on clinical history and examination and lasting at least three weeks. Acceptable interventions included any topical or oral therapy or surgical management. The primary outcome measure was disease recurrence. Studies of patients with co-morbid middle-ear disease were excluded from the review as were patients with diagnoses based solely on clinical history. Included studies compared vinegar with topical ofloxacin and surgical excision with antibiotic steroid drops and vinegar. The mean age of included participants was 29 or 38.4 years; male to female ratio of 7:23 or 49:45. The authors did not state how papers were selected for review or how many reviewers performed the selection.

Assessment of study quality
Included studies were assessed using the Oxford Centre for Evidence Based Medicine grading system and the following criteria: randomisation, blinding of patients and physicians, loss to follow up and additional sources of bias. The authors did not state how the validity assessment was performed.

Data extraction
For each included study, the reviewers appear to have extracted data on recurrence for each treatment group. These data were then used to calculate a risk difference (RD) and number needed to treat (NNT) for each study. The authors did not state how the data were extracted for this review or how many reviewers performed the data extraction.

Methods of synthesis
A narrative synthesis was carried out.

Results of the review
Two studies were included in the review: a case-control study (n=30) and a retrospective case series (n=74). Neither study was randomised or blinded at any stage.

The case-control study compared dilute vinegar solution with topical antibiotic drops (ofloxacin) and reported that there was an 80 per cent increased chance of avoiding recurrence in the vinegar treatment arm when compared with the antibiotic arm (NNT = 1.25). Two patients reported mild ear discomfort and one reported mild dizziness in the vinegar solution arm. No information was reported about the side effects of ofloxacin. The case-series study compared surgical excision of granular tissue with topical antibiotic and steroid drops. It reported a 96 per cent increased chance of recovery without recurrence following surgery when compared with conservative treatment (NNT = 1.04).
**Authors' conclusions**
Alternative therapies such as dilute vinegar solution should be considered over conventional antibiotic drops when treating granular myringitis. Surgery may be a viable option for intractable symptomatic patients.

**CRD commentary**
This review addressed a clear clinical question with detailed inclusion criteria that appear to have been adhered to. The search strategy was not reported fully, particularly with relation to unpublished literature. It is not clear if non-English language studies were included. Publication bias cannot be ruled out. The methodology of this review was poorly reported – for example, there were no details on the study selection, quality assessment or data extraction phases – so it was difficult to judge the extent to which various sources of error and bias may have influenced the process and final results. Quality assessment was carried out, but the results do not seem to have been taken into account in the analysis. A narrative synthesis was appropriate given the heterogeneity, but the small sample size and poor quality of the included studies make the conclusions appear much stronger than warranted by the limited evidence. This was a poorly reported review and the conclusions should be regarded with caution.

**Implications of the review for practice and research**
Practice: The authors stated that treatment with dilute vinegar solution should be considered as a logical nonharmful alternative to conventional antibiotic and steroid drops.

Research: The authors stated that randomised controlled trials are required to assess strategies to treat and reduce the recurrence of granular myringitis, including surgical debridement, endoscopy-aided laser therapy, cautery and topical application of low pH solutions.

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