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[Intervention Review]

Topical antibiotics without steroids for chronically discharging ears with underlying eardrum perforations

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ABSTRACT

Background

Chronic suppurative otitis media (CSOM) causes ear discharge and impairs hearing.

Objectives

Assess topical antibiotics (excluding steroids) for treating chronically discharging ears with underlying eardrum perforations (CSOM).

Search methods

The Cochrane Ear, Nose and Throat Disorders Group Trials Register, the Cochrane Central Register of Controlled Trials (CENTRAL, *The Cochrane Library* Issue 1, 2005), MEDLINE (January 1951 to March 2005), EMBASE (January 1974 to March 2005), LILACS (January 1982 to March 2005), AMED (1985 to March 2005), CINAHL (January 1982 to March 2005), OLDMEDLINE (January 1958 to December 1965), PREMEDLINE, *meta*Register of Controlled Trials (*m*RCT), and article references.

Selection criteria

Randomised controlled trials; any topical antibiotic without steroids, versus no drug treatment, aural toilet, topical antiseptics, or other topical antibiotics excluding steroids; participants with CSOM.

Data collection and analysis

One author assessed eligibility and quality, extracted data, entered data onto RevMan; two authors inputted where there was ambiguity. We contacted investigators for clarifications.

Main results

Fourteen trials (1,724 analysed participants or ears). CSOM definitions and severity varied; some included otitis externa, mastoid cavity infections and other diagnoses. Methodological quality varied; generally poorly reported, follow-up usually short, handling of bilateral disease inconsistent. Topical quinolone antibiotics were better than no drug treatment at clearing discharge at one week: relative risk (RR) was 0.45 (95% confidence interval (CI) 0.34 to 0.59) (two trials, N = 197). No statistically significant difference was found between quinolone and non-quinolone antibiotics (without steroids) at weeks one or three: pooled RR were 0.89 (95% CI 0.59 to 1.32) (three trials, N = 402), and 0.97 (0.54 to 1.72) (two trials, N = 77), respectively. A positive trend in favour of quinolones seen at two weeks was largely due to one trial and not significant after accounting for heterogeneity: pooled RR 0.65 (0.46 to 0.92) (four trials, N = 276) using the fixed-effect model,

Topical antibiotics without steroids for chronically discharging ears with underlying eardrum perforations (Review)

1

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and 0.64 (95% CI 0.35 to 1.17) accounting for heterogeneity with the random-effects model. Topical quinolones were significantly better at curing CSOM than antiseptics: RR 0.52 (95% CI 0.41 to 0.67) at one week (three trials, N = 263), and 0.58 (0.47 to 0.72) at two to four weeks (four trials, N = 519). Meanwhile, non-quinolone antibiotics (without steroids) compared to antiseptics were more mixed, changing over time (four trials, N = 254). Evidence regarding safety was generally weak.

Authors' conclusions

Topical quinolone antibiotics can clear aural discharge better than no drug treatment or topical antiseptics; non-quinolone antibiotic effects (without steroids) versus no drug or antiseptics are less clear. Studies were also inconclusive regarding any differences between quinolone and non-quinolone antibiotics, although indirect comparisons suggest a benefit of topical quinolones cannot be ruled out. Further trials should clarify non-quinolone antibiotic effects, assess longer-term outcomes (for resolution, healing, hearing, or complications) and include further safety assessments, particularly to clarify the risks of ototoxicity and whether quinolones may result in fewer adverse events than other topical treatments.

PLAIN LANGUAGE SUMMARY

A Cochrane systematic review assessing topical antibiotics without steroids for treating chronically discharging ears with underlying eardrum perforations, in participants of any age

Chronic suppurative otitis media (CSOM) is an infection of the middle ear with pus and a persistent perforation in the eardrum. It is a common cause of preventable hearing impairment, particularly in low and middle-income countries. This review assesses topical antibiotics (without steroids), to clarify whether they are better than no treatment or aural toilet (cleaning of the ear discharge), or treatment with topical antiseptics and to identify which antibiotic is best. Fourteen randomised controlled trials were included (1,724 analysed participants or ears); most were poorly reported, and some included a range of diagnoses.

Quinolone antibiotic drops (considered to be the 'gold standard' topical antibiotics) are better than no drug treatment or antiseptics at drying the ear. The effects of non-quinolone antibiotics (without steroids) when compared to antiseptics are less clear. Studies were also inconclusive regarding any differences between quinolone and non-quinolone antibiotics, although indirect evidence suggests a benefit of quinolones cannot be ruled out. Less is known about longer-term outcomes (producing a dry ear in the long term, preventing complications, healing the eardrum, and improving hearing), or about treating complicated CSOM. The evidence in these trials about safety is also weak. More research is needed to assess whether there may be fewer adverse events with topical quinolones than with alternative topical treatments.