Antifungal medications or disinfectants for denture stomatitis

Abstracted from

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Question: Are antifungal treatments more effective than other therapies for the treatment of denture stomatitis?

Data sources The Cochrane database of systematic reviews, the Cochrane Central Register of Controlled Trials (CENTRAL), Medline and Embase databases and reference lists of identified articles were searched with no language restriction.

Study selection Randomised controlled trials that compared the efficacy of antifungal medications with other treatments of denture-related erythematous stomatitis in adults wearing conventional acrylic removable complete dentures were included. Trials of seven days or fewer were excluded.

Data extraction and synthesis Study assessment and data extraction were carried out independently by at least two reviewers. Study quality was assessed using Cochrane methodology. Odds Ratios (OR) and 95% Confidence Interval (CI) were calculated to compare results across studies using a random effects model.

Results Fourteen randomised controlled trials were included in the review, with eight studies contributing to the meta-analysis. No statistically significant difference between antifungal treatment and disinfection methods was found for both clinical and microbiological outcomes. Meta-analysis showed a statistically significant difference between an antifungal and a placebo for the microbiological outcome (OR=0.32; 95% CI: 0.12-0.89; Z=-2.2; p=0.028), favouring the antifungals. There was no statistically significant difference between antifungal and placebo for the clinical outcome (OR=0.2; 95% CI: 0.04-1.04; Z=-1.9; p=0.056).

Conclusions The findings of this review and meta-analysis suggest that disinfection methods could be considered as an adjunct or alternative to antifungal medications in the treatment of denture stomatitis.

Commentary

Denture stomatitis is a common, erythematous, inflammatory reaction of the oral mucosa contacting removable prostheses. It is commonly attributed to the fungus Candida albicans, which colonises dentures and contacting mucosal surfaces, triggering an inflammatory response. Therefore, antifungal agents are often used to treat denture stomatitis, although other methods including changes in denture-wearing patterns, and denture cleaning/disinfection are also used.

Emami *et al*. conducted a systematic review, with meta-analysis, of RCTs comparing antifungal medications with other treatments for denture stomatitis.

The authors found no statistically significant difference between antifungals and broad-spectrum disinfection methods for both clinical and microbiological outcomes. Surprisingly, there was no significant difference between antifungals and placebo for clinical outcomes.

The procedures used were robust, including assessment of study quality using Cochrane methodology. However, the following factors should be taken into consideration in interpreting the results:

- The antifungal medication group included studies testing different antifungal medications (nystatin, miconazole, amphotericin B, fluconazole) with varying delivery mechanisms (rinse, incorporation into denture adhesive or tissue conditioner, lozenges, capsules). Since these medications differ in potency and the delivery route also affects efficacy, grouping these studies together may not present an accurate picture.
- Similarly, the disinfection methods group included studies testing disinfecting agents, natural substances with antimicrobial properties, microwave treatment, photodynamic therapy and use of antiseptic mouthwashes. Some of these modalities may be more effective than others.
- Wearing dentures all the time is strongly associated with denture stomatitis, and removal overnight can result in amelioration of symptoms. The studies examined included varying instructions to patients ranging from no alteration in prior habits to specific guidelines on denture use. This can confound interpretation of the results.
- As mentioned by Emami *et al*, the reviewed trials were of varying quality. The majority of studies did not report blinding of

examiners, and on dropouts and withdrawals. No trial used intention-to-treat analyses.

A systematic review by Skupien *et al*.[1] examined studies of methods to prevent or treat Candida infection in denture liners or tissue conditioners. Three in vivo studies supported the efficacy of nystatin to treat denture stomatitis.

Other studies supported the efficacy of sodium hypochlorite in disinfecting denture liners.

The results of these studies are not entirely surprising. Although presence of *C. albicans* is required for the development of this infection, it is increasingly appreciated that denture stomatitis is a mixed fungal-bacterial biofilm-induced disease. In fact co-aggregation of Candida with oral bacteria is common in denture biofilms in humans,[2] and in animal models of denture stomatitis.[3,4] Commensal bacterial species can contribute to mucosal inflammation triggered by *C. albicans*.[5]

Consequently, broad spectrum anti-infective agents would be expected to have at least the same efficacy, if not better, as anti-fungals in the resolution of this infection. Thus, following the current American College of Prosthodontists' guidelines,[6] recommending daily removal of the polymicrobial biofilm from dentures to prevent denture stomatitis, is critical in the control of this infection.

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