MEDICAL MANAGEMENT OF DENTURE STOMATITIS

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INTRODUCTION

Denture stomatitis is a chronic inflammatory lesion which is commonly associated with Candida albicans infection. It is frequently seen in complete denture patients and clinically presented as erythema and inflammation on the palatal mucosa. This review covers the different medical management of denture stomatitis. The first line of treatment is by topical antifungal agents, which are available as suspension, gels, lozenges, pastilles, etc. In patient where topical treatment was unsuccessful and in immunocompromised patient, systemic antifungal agents are prescribed. Recent studies have shown the effectiveness of natural products such as propolis, green tea extracts, and various essential oils in the treatment of denture stomatitis, to decrease colony count and reduce erythema of palatal mucosa.

Keywords: Denture stomatitis, Antifungal drugs, Propolis, Green tea, Essential oils.

INTRODUCTION

Denture stomatitis is a chronic inflammatory reaction seen in denture wearing patients, usually under the maxillary prosthesis. Its signs and symptoms are redness, inflammation, pain, bleeding, and tenderness. The etiology of denture stomatitis is multifactorial, but it is commonly associated with Candida albicans. Candida-associated denture stomatitis is due to local and systemic factors related to the host and to the Candida capability to adhere and proliferate in the host epithelial tissue [1]. The local factors which constitute to denture stomatitis include trauma, composition of saliva, pH of the oral cavity, permeability of acrylic resins, the presence of microbial plaque, and adhesion of Candida to host. The systemic factors which affect denture stomatitis are diabetes mellitus, nutritional deficiencies, kidney affections, serostomia, immunocompromised conditions, and immune suppressive drugs.

The classification of Candida-associated denture stomatitis according to Newton, 1962. It is based solely on the clinical criteria.

- Type I: Localized simple inflammation or pin-point hyperemia
- Type II: Diffused erythema and edema of the palatal mucosa covered by the dentures
- Type III: Granular surface or inflammatory papillary hyperplasia of the central palate.

The treatment for denture stomatitis aims at removing the etiologic agent which is the candidal overgrowth. Predisposing factors and underlying disease should also be corrected. Treatment should begin locally, maintaining oral hygiene, and also dealing with the defects in the denture such as irregular surfaces, ill-fitting dentures and broken dentures which could contribute to the candida like growth. Following that, for patients whom do not respond sufficiently to topical treatment or in immunocompromised patients, systemic medications should be administered.

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Systemic antifungal agents

Systemic antifungal agents are recommended for patients with poor compliance such as patients with special need or debilitating patients. It is also recommended for immunocompromised patients such as HIV positive individuals.

Fluconazole

Fluconazole 50-100 mg capsule/day is the systemic drug of choice due to its high efficacy and good tolerability [2]. Itraconazole

Itraconazole capsules of 100-200 mg/day for 15 days were given to patient with oropharyngeal candidiasis. It showed improvement but less effective than fluconazole. This is due to its drug interactions and unpredictable absorption of itraconazole capsules. However, it showed good results in patients where fluconazole failed, so it could be used for fluconazole-resistant Candida strains [3].

Ketoconazole

Ketoconazole 200-400 mg tablets taken once or twice daily is used for the treatment of denture stomatitis but it produces side effects such as nausea, vomiting, and abdominal pain.

Voriconazole

It is a new triazole antifungal drug administered as 200 mg tablets/day. It has shown a success rate of 98.3% in the treatment of esophageal candidiasis [4]. It is suggested to be useful against fluconazole-resistant strains of Candida. However, its not fully established and more research needs to be conducted on the drug.

Topical antifungal agents

Topical antifungal therapy is the cornerstone of treatment of localized candidiasis in healthy patients. It is available in a variety of forms such as suspensions, pastilles, tablets, lozenges, creams, powders, and gels.

Nystatin

Nystatin is a well-tolerated drug. It rarely produces side effects such as nausea, vomiting, and gastrointestinal effects. Nystatin binds to ergosterol on the Candida cell membranes and causes changes in the permeability of the cell membrane which leads to the penetration of the drug into the cell and finally causing cell death [5].

i. Nystatin in tablets 500,000 units, dissolved in the mouth, 3 times a day for 14 days
ii. Nystatin powder 100,000 units/g, placed on the tissue surface of the dentures, 3 times a day for 14 days [6]
iii. Nystatin in 100,000 IU/ml, 5 ml 4 times daily.

Miconazole

Miconazole is a widely used topical drug. It has desirable properties such as its effectiveness and good patient tolerance. However, a drawback is its interaction with other drugs like warfarin. The antifungal property
of miconazole inhibits enzyme cytochrome P450, which affects the clearance of certain drugs [7].

i. Miconazole mucoadhesive tablets, 50 mg, once daily, placed in the upper anterior buccal vestibule after brushing teeth in the morning. It should be held in place until dissolved. It exhibits higher salivary concentrations and better patient tolerance. It is the drug for the first line of defense of denture stomatitis but its high cost is a disadvantage[2].

ii. Miconazole varnish, single dose [8]

iii. Miconazole gel, applied topically, 3 times a day for 15 days [8].

**Amphotericin-B**

Amphotericin-B suspension, 5 ml thrice daily for 14 days results in complete remission of symptoms. It is a drug of choice as it is poorly absorbed by the intestinal tract; therefore, it is excreted without undergoing any change resulting in reduced hepatotoxicity. However, it has an unpleasant taste which may affect patient compliance. It binds to ergosterol on the Candida cellular membranes, causing changes in its permeability, leading to penetration into the cell and finally cell death [5].

**Fluconazole**

Fluconazole has been found to give good clinical results. It also reports better patient compliance due to the pleasant taste and dosage.

i. Fluconazole oral suspension, 2 mg/ml, 3 times daily

ii. Fluconazole oral suspension, 10 mg/ml, once daily [2].

**Clotrimazole**

One clotrimazole lozenge (10 mg) taken 5 times a day for 7-14 days [9]. It is also available as a cream or solution form. Clotrimazole 1% cream also has anti-Staphylococcal activity. It should only be used topically as it produces gastrointestinal and neurological toxicity.

**Ketoconazole**

About 2% ketoconazole applied topically twice daily together with 200 mg ketoconazole tablets once daily [10] is also used to treat denture stomatitis, but it is not preferred. This is due to the side effects such as nausea, vomiting, and gastrointestinal problems [11].

**Chlorhexidine**

Chlorhexidine has been demonstrated to have an antifungal effect. Chlorhexidine gluconate 0.2% solution used as a mouth rinse for the treatment of denture stomatitis. However, it shows more significant effect on the reduction of plaque compared to the reduction of colonies of Candida [5]. A 2% chlorhexidine suspension is used as an overnight denture disinfectant [12], which produces more promising results compared to its use as topical therapy. Chlorhexidine should not be administered at the same time with nystatin as it inhibits the antifungal capacity.

**Propolis**

Propolis, also known as bee glue, is a hard, resinous material derived by bees from plant juices which is used to seal openings in the hives. It contains pollen, resins, waxes, and large amounts of flavonoids [13]. The flavonoids in propolis, mainly pinocembrin, are responsible for its inhibitory effect on Candida. It can be applied for nystatin-resistant cases. However, it may produce side effects such as itching and complications such as contact dermatitis.

i. About 2.5% propylene glycol Brazilian green propolis gel, 5 ml taken with cotton swab and applied on the tissue surface of the denture and immediately placed in the mouth. 4 times daily for 14 days.

ii. About 24% propylene glycol Brazilian green propolis mouthwash, 5 ml to be taken and rinsed in the mouth for one minute and then spat out. 4 times daily for 14 days [14].
should be done as soon as lesion is identified and constant monitoring of the patient to ensure complete healing.

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