

Burning Mouth Syndrome

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Abstract

Complaint of a burning mouth is an increasingly common problem in the aging population. This has remained an enigma for the treating clinician, because visible pathologic lesions or processes are usually not evident. Local, systemic and environmental causes must be assessed to elicit the predisposing factors. Some suggestions for managing burning mouth syndrome are offered.

Key Words: Burning mouth, glossodynia, xerostomia, dysgeusia, dysphagia.

Introduction

Burning mouth syndrome (BMS) is a burning or stinging of the mucosa, lips, and/or tongue, in the absence of visible mucosal lesions. Van der Waal (1) defined the term “burning mouth syndrome” to refer only to idiopathic cases in which the main symptoms are located in the oral mucosa, with or without involvement of the tongue or any other part of the body. It has been estimated to affect more than one million Americans (2). There is a strong female predilection, with most female patients being postmenopausal and the age of onset being approximately 50 years (3, 4). The causes of BMS are multifactorial and remain poorly understood. Patients suffering from BMS are often evaluated by several clinicians, including the general practitioner, internist, otolaryngologists, dentists, oral and maxillofacial surgeons, oral medicine practitioners, and pain specialists. For this reason, it is important that a wide variety of specialists be able to recognize the signs and various causes of burning mouth syndrome, particularly those which fall outside of their specialties.

Symptoms

There are many symptoms associated with BMS which generally do not conform to anatomic boundaries. The tip of the tongue is the most common location (71%), followed by the lips (50%), lateral borders of the tongue (46%), dorsum of the tongue (46%), and palate (46%) (5). Lamb et al. (6) developed a classification system to group the varied course of symptoms. BMS type 1 is defined as the absence of symptoms upon awakening, with gradual increase in severity as the day progresses. Type 2 patients describe the burning as being present day and night. Type 3 patients are characterized as those with days of remission which follows no specific pattern.

A number of associated oral complaints have been observed concomitantly with the onset of BMS. Xerostomia, dryness of the mouth, is the most commonly reported symptom, occurring in approximately 50% of patients (1). In a study of salivary flow rates comparing BMS patients and asymptomatic patients, a decrease in salivary flow was not found to be associated with BMS (7). However, the salivary total protein and IgA concentrations were higher in BMS patients (8). Other commonly associated oral complaints include alteration in taste (dysgeusia), constant thirst, difficulty swallowing (dysphagia), and symptoms from the temporomandibular joint (9, 10).

Local Causes of Burning Mouth Syndrome

Although many predisposing factors have been attributed to BMS, all are controversial. Main and Basker (11) found ill-fitting dentures to be the single greatest contributor to BMS in their patient population. BMS patients were found to have significantly less daily denture use, reduced tongue space, incorrect placement of the denture occlusal table, and increased denture vertical dimension (12). However, in the majority of patients in whom denture abnormalities were adequately corrected, the burning mouth symptoms persisted (13).

A similar controversy attributes the cause of burning mouth to an allergic response to the denture materials. Methyl-methacrylate monomer and other products used in denture fabrication have been shown to produce positive skin reactions to patch testing (14). If erythema of the mucosa exists, the construction of new dentures using different materials, such as metal alloys, has been shown to result in a partial or even total relief of symptoms. However, in the absence of oral lesions

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which could indicate contact dermatitis, the substitution of materials in general has not been shown to alleviate BMS (15).

Hypersensitivity to mercury was found to be one of the most common medical diagnoses concomitant with BMS (10). In addition to mercury, other metals used in dental restorations are gold, palladium, zinc, tin, gallium, indium, cobalt, chrome, nickel, iron, and silicon. Although hypersensitivity to these materials has been reported, their precise role in the symptoms of BMS is not absolutely clear.

The symptoms of galvanism may resemble those of BMS, and they require consideration (1). Galvanism is the electrochemical reaction between different metallic restorations, such as dental amalgam and cast gold, in the presence of a conducting medium, i.e., saliva. The production of electrical currents can produce a sharp or burning sensation with or without an associated metallic taste. Treatment would involve the elimination of one of the metallic restorations or using synthetic nonconductive materials wherever applicable. As with BMS, there is a female predilection.

Pseudomembranous and erythematous candidiasis have been associated with BMS (16). The pseudomembranous type is easily recognized by white, slightly elevated plaques that have a milky appearance and can be rubbed off; it is most commonly found on the cheeks and palate. The erythematous type is characterized by flat, red changes of the mucosa, tongue, and palate. The diagnosis of candidiasis is often presumptive, made on the response to antifungal therapy and rarely from cytologic or histologic studies. Gorsky et al. (17) reported that in patients with BMS with no clinical signs of candidiasis, 86% improved after using antifungal lozenges and 13% had complete elimination of their symptoms.

Carcinomas of the oral cavity can also present with itching or burning as the first symptom (1). Oral carcinoma usually presents as an indurated, painful, ulcerated mass that is adherent to the underlying tissues. The most common sites for oral carcinoma include the tongue, floor of the mouth, mucosa of the alveolar ridges, buccal mucosa, and lower lip. Premalignant entities such as leukoplakia (a white adherent patch) or erythroplakia (one with areas of red intermingled within) may also present with burning or painful sensation. A biopsy should always be used to make the diagnosis and appropriate referral.

Systemic Causes of Burning Mouth Syndrome

Various systemic factors have been associated with BMS, although many of these conditions require further study to verify the correlation. There is a predilection for BMS to occur in menopausal and postmenopausal women (8); however, there have been varied opinions regarding the hormonal role in BMS. Oral discomfort, including burning mouth, is one of the two most common oral manifestations of menopause (18). Basker et al. (19) reported that 26% of patients evaluated for menopause experienced some oral symptoms, one-third of these describing BMS. Yet in early studies, neither topical nor systemic hormonal replacement therapy has been shown to be effective (20, 21). In a recent study, hormone-replacement therapy was found to be efficacious in BMS patients who had demonstrated nuclear estrogen receptors on immunohistochemical assay, and

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ineffective in those patients who did not have the receptors (22). Therefore, hormone modifications may have a role in selected patients with BMS.

Iron deficiency anemia and vitamin B complex deficiency have been considered possible factors associated with BMS (10, 23, 24). In one study (25), replacement therapy of vitamin B1, B2, and B6 was effective in treating BMS in 88% of patients. However, in another study of therapy-resistant BMS patients, vitamin B replacement therapy was unsuccessful (26). The definitive role of B complex vitamins in the etiology of BMS remains unclear.

Diabetes mellitus has been linked to BMS (19, 27) with an incidence rate of 10% (1) to 37% (27). It has been suggested that diabetics are more susceptible to the *Candida* infections which may cause the burning mouth (16). In addition, vascular changes that characteristically occur in diabetes cause changes in the small blood vessels of the mouth and thereby lower pain thresholds. While some found that the symptoms of BMS in diabetic patients did not decrease after glucose control (1), others found that in many cases, diabetic treatment resolved the oral symptoms (27).

Since burning mouth syndrome often has no clear etiology, an underlying psychiatric cause is often investigated. In one study, a psychiatric diagnosis was present in more than 50% of BMS patients, with depression as the most common disorder (28). In another, anxiety was reported to be more common than depression as a feature of the syndrome (29). BMS may be triggered by the significantly altered salivary composition caused by sympathetic activation resulting from psychological stress (8). However, while BMS patients may have elevated psychological stress, the onset of BMS symptoms has not been found to be related to stressful life events (30). Van der Waal (1) believes that it is far more likely that chronic intense symptoms of burning mouth may affect a patient's psychologic status rather than the reverse. Although stress and anxiety may exacerbate the problem, it has not been proven to be the definitive cause.

Diagnostic Work-up for Burning Mouth Syndrome

Since localized burning or itching sensation can be the first indication of the presence of a malignant lesion, a careful and thorough physical examination of the oral cavity should be performed. Random biopsies of normal-appearing oral mucosa and histologic examination of the buccal mucosa in 24 burning mouth patients did not show any abnormality (1). Underlying systemic diseases such as iron deficiency and pernicious anemia can be ruled out with appropriate blood work. Laboratory tests that should be considered include CBC, MCV, MCH, WBC, vitamin B12 (with B1, B2 and B6), folate, serum iron, TIBC, ferritin levels, and (%) transferrin saturation (1, 16).

Some medications have been implicated as possible causes of BMS (24). Drug substitution or lowering the dose of a drug to verify its role in BMS may be considered after discussion with the internist (1). In particular, antihypertensives such as ACE inhibitors have recently been implicated in some BMS cases (31).

Treatment of Burning Mouth Syndrome

If an underlying cause of BMS can be identified, treatment should be directed toward the

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source. If indicated, nutritional or estrogen replacement therapy should be initiated (32).

The scientific literature is replete with various palliative remedies which range from the common to the exotic. Fungicides, such as nystatin, have been shown to be effective and may be prescribed for anywhere from weeks to months, even when cultures fail to identify the causative organism (17, 32). Another remedy which has been described is a local application at the burning sites of a solution containing 7% salicylic acid in 70% alcohol soaked cotton pellets for about 10 seconds (1). Topical capsaicin has been reported to be beneficial in a few patients (32). Other concoctions, such as the “magic swizzle” (one part Kaopectate[®], one part diphenhydramine, and one part viscous lidocaine), have been used with some success. A recent article by Regnard et al. (33) advocated topical anesthesia such as benzydamine mouthwash, choline salicylate, mucaïne, or lozenges containing local anesthetics. Van der Waal (1) reports that the previously advocated use of a viscous solution of 2% lidocaine hydrochloride in a carboxymethylcellulose sodium and water vehicle has not been effective for therapy, since the analgesic effect has a short duration.

Antidepressants have also been suggested as treatment for BMS when other treatments have failed, or if depression accompanies the pain (2, 32, 34). The mechanism of action by which tricyclic antidepressants work to provide analgesia is unclear. However, those medications with both serotonergic and noradrenergic effects, such as amitriptyline or doxepin, appear to be the most effective clinically. Amitriptyline should be started initially at a low dose and titrated to affect, beginning at 25 mg, or even 10 mg, in the elderly, daily or at bedtime (35). The analgesic effect usually appears at these low doses before they have effect on mood elevation (36), and is evident at one week for most patients. Increases of 25 mg can be made at weekly intervals if the analgesic effect is inadequate and the adverse effects are not pronounced. The most common adverse effects included drowsiness and xerostomia, but neither was found to be significant at these low doses. It is not known if doses greater than 75 mg produce more analgesia without significant adverse effects (35).

Even among patients whose symptoms persist lifelong, the majority adjust to the symptoms and give up seeking treatment (1), particularly if the clinician demonstrates a supportive and caring attitude (37). Patients with BMS refractory to other treatment should undergo psychiatric investigation (38). A psychological approach therapy has been used successfully to treat burning mouth syndrome (39). Some believe that psychotherapy combined with antidepressants is the most effective treatment when other causative factors are eliminated (4, 40).

Clearly, there are many opinions regarding the cause, proper diagnosis, and treatment of burning mouth syndrome. However, further research on BMS is required, as at this time there are no well-documented long-term studies of large numbers of BMS patients. In the final analysis, the clinician must recognize that burning mouth syndrome is a multifactorial disease process in which numerous possible etiologies must be eliminated before the proper treatment can be initiated.

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