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Oral burning and burning mouth syndrome

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CLINICAL PROBLEM

A 60-year-old woman visited a dental office with a complaint of constant, bilateral oral burning pain of five years' duration; she rated the average pain level as a 4 or 5 on a scale of 0 (no pain) to 10 (greatest amount of pain). Areas affected by this pain included the dorsum of the tongue, the anterior hard palate, the buccal mucosa and the lips. The patient was perimenopausal and her medical history indicated she had irritable bowel syndrome, migraine headaches, anxiety and depression.

The patient was receiving treatment with a selective serotonin reuptake inhibitor, a β -blocker and an analgesic for these conditions. In addition, she reported an unremarkable dental history and denied using tobacco products, alcohol or recreational drugs. She also denied performing parafunctional oral habits. The patient had visited several dentists and physicians for diagnosis and treatment of her oral burning during the five-year period. Despite having undergone routine dental imaging (panoramic, periapical and bitewing radiography), medical imaging (computed tomography and magnetic resonance imaging), hematologic screening (complete blood count with differential test; liver, renal and thyroid function tests; and fasting blood glucose test), allergy testing and a biopsy of the oral mucosa—the results of which were unremarkable—she did not receive a specific diagnosis for her condition. Furthermore, even though treatments were instituted, they did not result in adequate symptom relief. The patient's dentist referred her to the Faculty

Dental Practice at the University of Illinois at Chicago College of Dentistry. Practitioners with training in oral medicine and orofacial pain (G.D.K., J.B.E.) established a diagnosis of primary burning mouth syndrome (BMS).

EXPLANATION

BMS can be classified into two categories. Primary (essential/idiopathic) BMS is characterized by a burning sensation in the oral mucosa and perioral areas, typically with a bilateral and symmetrical distribution, and with no clinical or laboratory findings to account for the burning. Secondary BMS is oral burning that occurs as a result of clinical abnormalities, including oral mucosal lesions, systemic diseases, certain psychological conditions and adverse effects of certain medications.

Distinguishing primary from secondary BMS requires a recognition of symptoms and their characteristics along with ruling out underlying intraoral (local) disease, systemic disease or both. To accomplish this, clinicians may need to perform adjunctive laboratory studies, imaging studies or both. Thus, to date, the diagnosis of primary BMS may be considered a diagnosis of exclusion. Unfortunately, the literature suggests that diagnosis of primary BMS may be challenging for both medical and dental clinicians, and this often leads to a substantial delay in establishing a correct diagnosis and in initiating appropriate treatment strategies.¹⁻³

The reported prevalence of BMS is between 0.7 and 5 percent of the general population, with variation likely based on whether the study was a survey or a clinical assessment, the

BOX

Local, systemic and psychological factors potentially related to burning mouth syndrome.*

LOCAL FACTORS

- Dentures: fit and design
- Dental trauma
- Mechanical or chemical irritants: galvanic reactions
- Parafunctional habits: clenching, bruxism, tongue posturing
- Allergic contact stomatitis: dental restorations, denture materials, oral care products, foods, preservatives, additives, flavorings
- Infection: bacterial, fungal, viral
- Hyposalivation: salivary gland disorders, medications, radiation therapy
- Oral mucosal lesions: lichen planus, benign migratory glossitis, scalloped or fissured tongue

SYSTEMIC FACTORS

- Deficiencies: iron (anemia), vitamin B₁₂, folate, zinc, vitamin B complex (B₁, B₂, B₆)
- Endocrine: diabetes, thyroid disease, menopause, hormonal deficiencies
- Hyposalivation: connective-tissue disease or autoimmune disorders, iatrogenic conditions (such as drug-induced or associated with radiation therapy), anxiety or stress
- Medications: angiotensin-converting enzyme inhibitors, antihyperglycemics, chemotherapeutic agents
- Esophageal reflux disease
- Taste disturbances
- Neuropathy or neuralgia

PSYCHOLOGICAL FACTORS

- Depression
- Anxiety
- Obsessive-compulsive disorder
- Somatoform disorder
- Fear of cancer
- Psychosocial stressors

* Adapted with permission of the Canadian Dental Association from Klasser and colleagues.¹⁸

population assessed and the geographical location of the study population.^{4,5} BMS is reported most commonly in perimenopausal women, with onset of symptoms typically occurring between three years before menopause and 12 years after menopause⁶; BMS rarely manifests before age 30 years.⁷ Investigators have reported a female preponderance, with the ratio between women and men ranging from 3:1 to 16:1.^{6,8} Patients typically describe the burning pain as having a bilateral symmetrical distribution, most frequently involving the anterior two-thirds of the tongue, the dorsum and lateral borders of the tongue, the anterior hard palate and the mucosa of the lower lip, often in more than one oral site.^{6,8}

Researchers have reported that onset of symptoms in approximately 50 percent of patients is spontaneous, without any recognizable triggering factor^{5,9}; however, 17 to 33 percent of patients attribute the onset of symptoms

to an upper respiratory tract infection, a previous dental procedure or medication use (including antibiotics).^{9,10} Other patients have reported that onset of symptoms occurred after traumatic life stressors.^{5,8,9,11} The symptoms usually are present continuously for months or years without periods of cessation or remission⁹; some reports suggest a mean duration of two to three years.¹² In a more recent study, investigators reported observing a complete remission in only 3 percent of patients within five years after onset of BMS.¹³

Patients typically report experiencing constant daily burning, with approximately one-third of patients experiencing symptoms day and night.^{6,7} Most patients report experiencing minimal symptoms on awakening; the symptoms increase gradually during the day and climax in the evening.⁶ In the majority of patients, the burning sensation intensifies in the presence of personal stressors and fatigue, and it may be aggravated by eating acidic, hot or spicy foods. However, in about one-half of patients, oral intake or stimulation (for example, chewing sugar-free gum, sucking on sugar-free candy, sip-

ping water) and distraction reduce or alleviate the symptoms.^{6,14} More than two-thirds of patients complain of dry mouth,^{6,7} which may or may not be accompanied by an objective decrease in salivary flow rates^{10,15,16}; however, researchers in several studies have shown qualitative changes in salivary composition.^{10,15}

There is increasing agreement that BMS represents an idiopathic neuropathic pain condition,¹⁷ even though a considerable number of local, systemic and psychological factors have been reported to be related to the condition (Box¹⁸). Evidence suggests that both central¹⁹⁻²¹ and peripheral neuropathic changes,^{21,22} possibly involving sensory and autonomic innervations, may be active in patients with BMS. Another proposed model is based on taste and pain interactions; investigators hypothesized that BMS could be the result of damage (mechanical, chemical, biological or a combination of the preceding) to the taste system (such as taste distur-

bances, changes in normal sensory function) involving the chorda tympani nerve, the glossopharyngeal nerve or both, resulting in disinhibition of pain sensation within the trigeminal nerve.²³ Woda and colleagues²⁴ proposed that BMS involves a cascade of events in women undergoing menopause who also are experiencing chronic anxiety or posttraumatic stress.

CLINICAL IMPLICATIONS

From a clinical perspective, the treatment options for patients with primary BMS are limited because of our incomplete understanding of the etiology of and pathophysiological processes for this disorder. Current treatment approaches include three strategies that may be used alone or in combination:

- behavioral strategies such as cognitive behavioral approaches, group psychotherapy or both;
- topical therapies such as anxiolytics (such as clonazepam used in a “swish and spit” method), atypical analgesics, antimicrobials, artificial sweeteners and low-level laser therapy;
- systemic approaches involving the use of various medications such as antidepressants, anxiolytics, anticonvulsants, antioxidants, atypical analgesics and antipsychotics, histamine receptor antagonists, monoamine oxidase inhibitors, salivary stimulants, dopamine agonists and herbal supplements.

CONCLUSION

Researchers conducting clinical studies of these various treatment approaches have reported variable outcomes.^{17,25-27} Because many of the approaches to BMS treatment fall outside the training and expertise of general dental practitioners, clinicians should consider referring patients to oral care providers who are experienced in treating orofacial pain disorders. ■

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