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# Burning mouth syndrome: Present perspective

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ABSTRACT

Introduction: Burning mouth syndrome is characterized by chronic oral pain or burning sensation affecting the oral mucosa in the absence of obvious visible mucosal lesions. Patient presenting with the burning mouth sensation or pain is frequently encountered in clinical practice which poses a challenge to the treating clinician.

Its exact etiology remains unknown which probably has multifactorial origin. It often affects middle or old age women and it may be accompanied by xerostomia and altered taste.

Objective: To review the current concepts regarding etiopathogenesis, diagnosis and management of this disorder.

Methods and methodology: A literature review was conducted on PubMed/Medline and Google scholar about the burning mouth syndrome and the representative articles were selected and reviewed.

Conclusion: There is no universal consensus regarding diagnosis, etiology and treatment of BMS. BMS is a diagnosis of exclusion which probably has multifactorial origin. Various pharmacological and non pharmacological treatments are available but it is difficult to achieve curative treatment so reassurance is of great importance while treating the patients. Combination of cognitive behavioural therapy, alpha lipoic acid and/or clonazepam has shown promising results.

Introduction:

Patient presenting with the complaint of burning sensation in the mouth is frequently encountered in clinical practice which poses a challenge to the treating clinician. There are many systemic and local disorders causing a burning sensation of the oral cavity. However, psychogenic and neurological conditions may be responsible for this symptom. As its name implies burning mouth syndrome (BMS) is one of the condition causing burning sensation of oral cavity which has various synonyms such as stomatodynia, glossodynia, glossopyrosis and oral dysaesthesia. [1] The International Association for the Study of Pain and International Headache Society defines BMS as 'all forms of burning sensation in the mouth, including complaints described as stinging sensation or pain, in association with an oral mucosa that appears clinically normal in the absence of local or systemic diseases or alterations'. True idiopathic BMS has burning pain in the tongue or other oral mucosal membrane in absence of clinical and laboratory abnormalities. [2,3,4] Patient with BMS presents with moderate to intense chronic oral pain or burning sensation of mouth which appears to be medically unexplainable, due to absence of apparent lesions or systemic disorders. [1,4]. It is a diagnosis of exclusion having the prevalence ranging from 0.7% to 4.6%. [1] Although a substantial volume of research has been done in various parts of the world during the last two decades there are no strict diagnostic criteria; and other systemic and local diseases can also cause burning sensation of the mouth; which probably is the reason behind overestimation of its prevalence. BMS is more common in perimenopausal or postmenopausal women which may also be associated with other chronic pain disorders, depression, anxiety or somatization; so the patient usually have poor quality of life.[4,5,6].

Clinical Features:

Based on the clinic-pathological stand-point two forms of BMS has been described: primary BMS, an idiopathic form of pain disorder, and the secondary BMS, which results from various local or systemic disorders.[1] This secondary form of BMS may respond well to the therapy if cause is identified.

Burning mouth syndrome most frequently affects middle-aged and elderly women. Patient with this syndrome usually presents with the complaint of burning sensation in the mouth for a prolonged period of time, most frequently involving the tongue although palate, gums or lips may also be affected.[7,8] Occasionally there may be burning sensation of whole of the oral cavity. Alterations in taste sensation and xerostomia often accompany BMS. Xerostomia is a subjective feeling as there is no actual decreased saliva production by the gland.[8] Similarly, burning sensation and numbness may occur simultaneously. The discomfort may be moderate to intense, severity of which vary throughout the day.[9] There are no physical signs and investigations are all negative. Usually the onset of pain is spontaneous however in some patients there is history of precipitating factors such as stressful life events or dental treatment.[10,11]. Natural course of this syndrome is not fully understood. It may last for 12 years or more[12] with an average duration of 3.4 years in majority of patients. However, up to two-thirds of patients may recover within 6-7 years of onset.[8,13].

There is no universally accepted form of classification for BMS though; the one proposed by Lamey and Lamb[14] may be useful from the clinical point of view. Based on the presentation pattern of symptoms the BMS may be classified into three types: Type 1 BMS is characterized by absence of symptoms on awakening with burning sensation gradually appears and increases in severity during the day time and reaches the peak in the evening. Type 2 BMS patients have continuous persistence of symptoms throughout the day and night with some patient finds difficulty in falling asleep. In type 3 BMS there is intermittent symptoms with pain free intervals during the daytime and variable symptoms between days.

The diagnosis is established mainly from the history and clinical examination. Oral pain in BMS is usually bilateral in nature that doesn't follow the anatomical distribution of a peripheral nerve; this may be useful to rule organic cause of burning oral pain which often involves the anatomical distribution of the sensory nerve.[13] Beside this feature, the burning pain in BMS may be relieved by eating and drinking. As it is a diagnosis of exclusion, routine and additional investigations may have to be considered, which should be directed towards detection of organic disease.

Etiopathogenesis:

The pathophysiology of BMS is not yet fully understood and various hypotheses have been proposed to explain its etiopathogenic mechanism. BMS being a diagnosis of exclusion, systemic and local disorders that can cause burning sensation in mouth has to be ruled out.

Local conditions causing burning sensation inside mouth includes smoking, dental conditions such as ill fitting denture, contact hypersensitivity to dental materials, alkaline oral rinses or acidic foods. Mucocutaneous diseases such as oral candidiasis, lichen plannus, lichenoid reactions, pemphigus and glossitis need to be considered as the differential diagnoses. Clinical examination followed by biopsy will usually exclude these diagnosis.[17] Similarly, viral infections such as herpes simplex or zoster may cause burning sensation.

Systemic causes like metabolic, nutritional or endocrine disorders may also cause burning sensation of mouth. This includes diabetes, hypothyroidism, iron, folic acid, zinc or vitamin deficiency, particulary Vit B12.[18] Connective disease like Sjogren syndrome, post radiation therapy, angiotensin-converting enzyme inhibitors, protease inhibitors, cytotoxic agents, anticholinergic and antihistaminic medications or age related decrease in saliva production can result into xerostomia which in turn causes burning mouth.

The exact etiology of BMS is not clearly understood. Therefore, it is thought to be of multifactorial in origin. [7, 19] Local and systemic factors have been proposed as the possible etiological agents from various studies. [7,8,20,21,22] Other possible factors include psychological factors such as anxiety, hypochondriasis, depression, stress, life events, personality disorders, cancerophobia and neuropathy.[23,24,25] It has also been suggested that BMS occurs due to damage to the taste pathways eg. chorda tympani nerve ; and axonal degeneration of the trigeminal sensory nerve fiber has been demonstrated as well. [15,26,27,28] .

Management:

The management of BMS is complex because it is not easily diagnosed and there have often already been multiple consultations as the patients with BMS often have multiple complaints such as dry mouth, bad or altered taste and other psychogenic complaints. So, the patient may present to the ENT surgeon, dentist, dermatologist, physician or psychiatrist. There are no specific laboratory tests or diagnostic criteria for the diagnosis of BMS but the history and clinical examination are important along with laboratory investigations and/or intraoral biopsy to rule out possible local and systemic disorders having burning symptom. History should include a review of systemic diseases and medications usage as well as other local disorders causing xerostomia, altered taste sensation and burning sensation of mouth. Investigations and conditions to be considered during work up of the patient with burning sensation of mouth includes; candidiasis, salivary dysfunction, taste dysfunction, vitamin and mineral deficiency (Vit B12, folate, iron), hyperglycemia, mucosal disease, underlying psychiatric illness, and side effects of medications. Treatment of a patient with BMS may range from no treatment or pharmacotherapy to cognitive behavioural therapy as there is paucity of information on the natural course of the condition. These pharmacotherapeutic agents belongs to antiepileptic drugs, antidepressants, antipyschotics, analgesics, mucosal protectors, topical capsicin and alpha lipoic acid.[1,2] Variable outcomes have been reported with treatment with the various drugs and methods and these are rarely completely effective.[1,4]Anti depressants have long been considered the mainstay for the management of neuropathic pain conditions.

There is anecdotal evidence of some effectiveness for both tricyclic antidepressant and serotonin reuptake inhibitors. These drugs can be considered in the view of possible psychogenic component that may be present in BMS. Tricyclic antidepressants such as amitryptyline and nortriptyline at low doses are found to be useful but some authors contraindicate their use as these drugs can cause dry mouth, thus making the condition even worse. Antiepileptic drugs enhances the inhibitory effects upon the central nervous system acting like gamma amino butyric acid (GABA) resulting in reduction of neuronal excitability and pain. Clonazepam and gabapentin are the main antiepileptic drugs that have been used to treat BMS. [11,29,30]Analgesic drugs such as capsaicin (topical and systemic) and benzydamine hydrochloride have also been used to treat BMS viewing their usefulness for chronic pain disorders. Topical capsaicin has been applied locally as a desensitizing agent but its use is restricted due to its taste. Systemic capsaicin via oral route has been tried in some studies but its prolonged use is not recommended as it causing epigastric pain. (31) Studies have also demonstrated that rinsing with mouthwash such as benzydymine hydrochloride have limited therapeutic role due to its short duration of analgesic effect.[32]

Other pharmacologic agents have also been tried such as hormone replacement therapy, with little evidence of effectiveness, especially in postmenopausal women. [34] Clinical trials have been carried out using antioxidants such as alpha lipoic acid, Vitamin C and E have found to significantly improve the symptoms in majority of patients with BMS.

Alpha lipoic acid is a neuroprotector which prevents damage to nerve cells by free radicals and reduces symptoms of peripheral neuropathy. [35] Sucralfate has also been used in some trials based on the fact that it has protective role on digestive mucosa. [36]

Nonpharmacologic treatment modalities have also been considered such as cognitive behavioural therapy, which have demonstrated reduction in symptoms with no adverse effects.[37] There have been promising results of acupuncture as an alternative method of treating pain in BMS.[38] Overall, reassurance of the patient regarding the condition is very important while treating a patient because there is no curative treatment and the data from the retrospective study have also found spontaneous remission in some patients with BMS, few years after the onset of symptoms.[33]

Conclusion:

Although various studies have been carried out, there is no universal consensus regarding diagnosis, etiology and treatment of BMS. However, based on the available evidences it can be said that BMS is a multifactorial disorder, which appears to have psychological and neuropathic origin. Systemic and local conditions have to be ruled out first as BMS is a diagnosis of exclusion. Reassurance is of great importance while treating the patient as it is difficult to achieve curative treatment for this condition even with various types of treatment modalities; and also in some patients there is chance of spontaneous remission. However, combination of cognitive behavioural therapy, alpha lipoic acid and/or clonazepam has shown promising results. Thus, future studies involving multiple clinical specialties are required for the better understanding and treatment of the condition.

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