

# BURNING MOUTH SYNDROME : OVERVIEW & MANAGEMENT STRATEGIES

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## INTRODUCTION

Burning mouth syndrome is a chronic pain syndrome characterized by burning pain in the oral mucosa, usually without accompanying clinical and laboratory findings. This condition is probably of multifactorial origin, often idiopathic, and its pathogenesis remains largely enigmatic. As a result, patients with inexplicable oral complaints are often referred from one health care professional to another without effective management. This situation not only adds to the health care burden of the complaints but also has a significant emotional impact on patients, who are sometimes suspected of imagining or exaggerating their symptoms. Thus, BMS represents a disorder with a very poor prognosis in terms of quality of life, and patient's life style may worsen when psychological dysfunctions occur.

Despite the fact that a voluminous amount has been published in this field, a universally accepted definition of this syndrome is still lacking. Various synonyms---such as STOMATOPYROSIS, GLOSSOPYROSIS, STOMATODYNIA, GLOSSODYNIA, SORE MOUTH, SORE TONGUE, SCALDED MOUTH SYNDROME and ORAL DYSESTHESIA--- have been interchangeably adopted to emphasize the quality and/or the location of pain in the oral cavity. In this syndrome, however, pain represents the main symptom within a variety of chronic oral complaints. Thus, BMS appears to be the most appropriate terminology.

Burning pain without mucosal or skin lesions, however, represents the typical symptom of chronic neuropathic pain conditions resulting from nerve damage, and in recent years a neuropathic basis of BMS has been better identified through the use of more sensitive diagnostic techniques. This new evidence, in increasingly larger groups of BMS subjects, suggests a common background of neuropathy in the pathogenesis of this syndrome. As a result, it seems more appropriate to recognize two clinical forms of BMS---- "primary BMS" or essential idiopathic BMS for which organic local/systemic causes cannot be identified; and "secondary BMS" resulting from local/systemic pathological conditions and thus potentially sensitive to etiology-directed therapy. According to these criteria, 'idiopathic' BMS as well as the "secondary" form may represent two distinctive subgroups of the same "pathological entity."

Consequently, the initial approach to diagnosis of BMS is to identify and manage potential precipitating factors. Secondary BMS patients may initially present with similar clinical and psychosocial features, but are distinguishable with careful diagnosis that often enables successful management of symptoms. Possible etiopathogenesis in

BMS is summarized in table 1

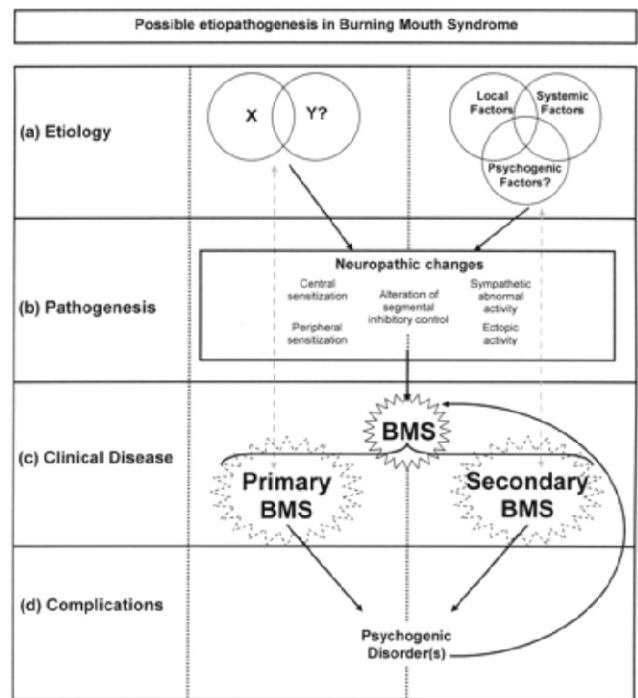


TABLE 1

## CLINICAL FEATURES

The term "BMS" clinically describes a "variety of chronic oral symptoms that often increase in intensity at the end of each day, and that seldom interfere with sleep". Accordingly, two specific clinical features define this syndrome: (1) a "symptomatic triad", which includes unremitting oral mucosal pain, dysgeusia, and xerostomia; and (2) "no signs" of lesion(s) or other detectable change(s) in the oral mucosa, even in the painful area(s). Full-blown syndrome is commonly observed in specific subgroups of patients, such as peri-/post-menopausal women. In the remaining cases, "oligosymptomatic" (pain and dysgeusia or pain and xerostomia) or "monosymptomatic" (pain only) forms of BMS are the most frequent presentations. More recently, increasing attention has been given to the altered perception of sensory/chemosensory functions as well as to the changes in the psychological profile of many BMS patients. As a result, both disturbances should be included in the clinical spectrum of BMS

There is a strong female predilection, with most female being postmenopausal and age of onset being approximately 50 years. There are many symptoms associated with burning mouth syndrome 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 border of the tongue (46%), dorsum of the tongue (46%) and palate (46%). Table 2 shows commonly reported symptoms in patients of burning mouth syndrome

**TABLE 2**

**Main Symptoms in Patients with Burning Mouth Syndrome**

Symptom	Type(s) of Complaint(s)
Oral mucosal pain* (main complaint)	Burning Scalding Tingling Numb feeling
Dysgeusia*	Persistent taste Altered taste perception
Xerostomia*	Dry mouth
Others	Thirst Headache TMJ pain Tenderness/pain in masticatory, neck, shoulder, and suprahyoid muscles

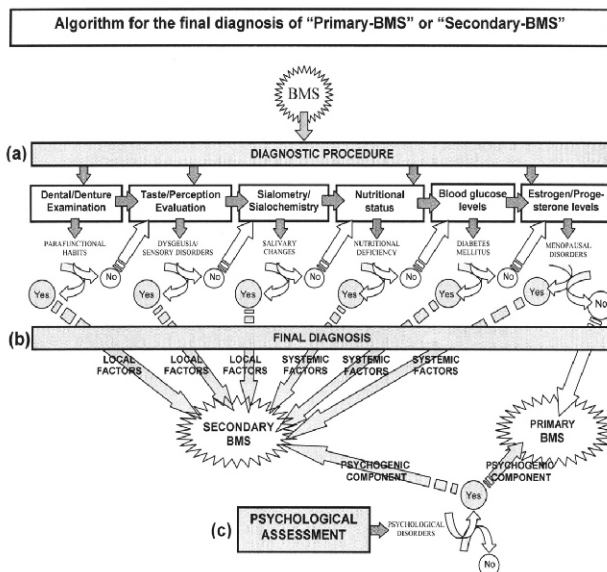
\* BMS symptomatic triad;

TMJ = temporomandibular joint.

**DIAGNOSIS**

The procedure for differentiating "primary" from "secondary" BMS includes clinical/laboratory tests that are specifically meant to identify local/systemic factors associated with the syndrome. Table 3 shows algorithm for reaching a diagnosis in BMS patients

**TABLE-3**



**MANAGEMENT**

**VARIOUS THERAPEUTIC MODALITIES**

Many pharmacological agents administered topically or systemically, have been proposed to overcome the pain in BMS. Based on the reported new evidence of changes in peripheral autonomous innervation in BMS, topical administration of drugs has recently been considered. In particular, daily topical use of clonazepam ( or tablet applied 3 times each day for sucking) has shown partial to complete pain relief in most patients with idiopathic BMS. Low doses of capsaicin, applied 3 or 4 times topically on the area(s) where the pain is localized, appear to be quickly effective in alleviating the pain in BMS subjects.

Patients with a stronger psychogenic component may be unresponsive to these medications. In these cases, the most effective pain management is the systemic administration of mood-altering drugs. Long-term treatment with benzodiazepine-class drugs (anxiolytics) may be clinically useful in BMS subjects. Other mood-altering drugs in BMS include anti-depressants. Low doses of tricyclic anti-depressants are characterized by an analgesic action, independent of their anti-depressive effect. Sertraline, paroxetine, and amisulpride are reported to be well-tolerated and effective after a four- to eight-week administration in BMS subjects. Analgesic doses of anti-depressants should be adjusted according to the individual response and may be particularly indicated in BMS patients with minor depression.

Patients who do not respond to any of the above treatments (resistant BMS) should undergo "cognitive" or "cognitive/behavior" therapies, since they probably have, in their BMS spectrum, a strong and complex psychogenic component of the pain. The purpose of psychodynamic therapy is to allow each patient to understand the causes of his/her symptoms.

**VARIOUS MODALITIES FOR TREATMENT OF BURNING MOUTH SYNDROME**

Important pharmacological and alternative therapies used in BMS are being described below.

**ANTIDEPRESSANTS**

Since problems such as depression and anxiety play an important role in modulating pain perception, and are able to increase or decrease nerve transmission from the peripheral pain receptors and thus modify individual perception of the pain, treatment has been provided in the form of antidepressants among patients with BMS. Both tricyclic antidepressants and serotonin reuptake inhibitors are used to treat neuropathic pain. Antidepressants which have been studied for BMS treatment are trazodone, paroxetine, sertraline, moclobemide and doxepin.

**ANTISYCHOTIC DRUGS**

Antipsychotic drugs that have been used for treating

this syndrome are amisulpride, levosulpride and olanzepine. Amisulpride is a selective dopamine antagonist. Its effect along with other antidepressants has been showed in the study conducted by Maina et al in 2002.

#### ANTICONVULSANTS

It has long been appreciated that there are similarities between epilepsy and neuropathic pain and antiepileptic drugs may also have an analgesic effect in neuropathic pain. Among these groups of drugs mention should be made of gabapentin and clonazepam. Many authors have shown patients with BMS to suffer sensory alterations such as changes in heat tolerance, hypogeusia and dysgeusia, and increased excitability of the palpebral reflex, related to dysfunction of the dopaminergic system at central nervous system (CNS) level. Such dysfunction would comprise reduced dopaminergic inhibition and thus increased neuron excitability. Dysfunction of the dopaminergic system would justify systemic administration of the antiepileptic drugs gabapentin and clonazepam, which act upon the gabaergic system - enhancing its activity in an attempt to counter dysfunction of the dopaminergic system.

Topical clonazepam presently seems to be the best option with healing of almost half of the patients.

#### C FIBRE NOCICEPTOR DESENSITIZER

##### CAPSAICIN

The effect of capsaicin on the pain in burning mouth syndrome depends on the underlying pathophysiological mechanism of the process involved in the patient's pain. The effect of the capsaicin is to desensitize the c-fiber nociceptors, thus exciting significant effects on painful disorders arising from these afferents.

#### NON STEROIDAL ANALGESIC

##### BENZIDAMINE HYDROCHLORIDE

Benzidamine hydrochloride is a non steroidal drug with analgesic, anti-inflammatory and antimicrobial properties. Its mechanism of action is not entirely known, but the drug may effect formation of thromboxanes and alter the rate of prostaglandin production, and thereby inhibiting platelet aggregation and stabilizing cell membranes.

#### DRUGS USED AGAINST PEPTIC ULCERS

##### SUCRALFATE

Sucralfate was selected by Campisi et al on grounds that it protects the digestive mucosa. It strongly adheres to the ulcer. It precipitates surface proteins at ulcer base and act as a physical barrier for preventing acid, pepsin and bile from coming in contact with the ulcer base. The ulcer healing dose of sucralfate is 1 gm taken 1 hr before three major meals and at bed time for 3-4 weeks.

#### ANTIOXIDANT

##### ALFALIPOIC ACID (ALA)

Alfa lipoic acid is a natural antioxidant, unique free radical protector having excellent bioavailability. It is a sulfur containing substance that is readily converted to and from its reduced form, dihydrolipoic acid. It also elevates

cellular levels of glutathione whose low levels cause oxidative stress, inflammation and nerve damage leading to peripheral neuropathy. It is therefore possible that BMS may be a neuropathy related to free radical production and low levels of intracellular glutathione and that alpha lipoic acid may be beneficial in at least some of the patients with this complaint.

#### TOPICAL ANAESTHETIC AGENTS

As neuropathic pain frequently is associated with a peripheral ectopic generator, it is logical to use a topical anesthetic to desensitize the painful site. This approach may decrease the neuronal firing and relieve the pain or burning sensation. Topical lidocaine (5%), xylocaine and benzocaine are used frequently on the oral mucosa.

#### TABLE 4 SHOWS RESEARCHES DONE ON VARIOUS DRUGS IN TREATMENT OF BMS

**TABLE 4**  
**EFFICACY OF DRUGS USED TO TREAT SYMPTOMS OF BURNING MOUTH SYNDROME**

Author	Drug/Dose	Sample	Duration	Results
Tammiala Salonem	Trazodone 100 mg	18	8 Weeks	73% showed improvement
Pekiner FN	Meclobenide 150 mg	94	3 months	39% showed good improvement 47% showed average improvement
Maina et al	Amisulpride 50 mg/day	27	8 Weeks	70% showed improvement
	Paroxetine 20 mg/day	26	8 Weeks	70% showed improvement
	Sertraline 50 mg/day	23	8 Weeks	70% showed improvement
Demorosi F	Levosulpride 100 mg/day	39	8 Weeks	72% showed improvement
Ueda	Olanzapine 2.5 mg/day	2	2 Weeks	Both showed improvement
Heckman in	Gabapentin 300 mg/day	15	3.3 Weeks	33% showed improvement
Grushka et al	Systemic clonazepam 0.25 mg/day 3 mg/day	30	8 Weeks	43% showed improvement
Woda et al	Topical clonazepam 0.5-1 mg 3 times/day	25	4 Weeks	36% showed improvement 40% showed complete resolution
Gremeau- Richard	Topical Clonazepam	24	2 Weeks	32% showed improvement 41% showed complete resolution
Petruzzi et al	Capsaicin 0.25%	25	4 Weeks	83% showed improvement
Sardella et al	Benzidamine Hydrochloride 0.15% as a rinse	10	4 Weeks	10% showed improvement



Campisi et al	Sucralfate 20% suspension 4 times/day	14	3 Weeks	36% showed
Femiano et al	alpha lipoic acid 600 mg/day	48	8 Weeks	50% showed improvement 31% showed Complete resolution

## ALTERNATIVE THERAPIES

### Electroconvulsive Therapy for Burning Mouth Syndrome

ECT can be considered to be an option for treating individuals with enduring and intractable intraoral burning pain. A 66-Year-Old woman with BMS type 1, which is characterized by daily burning pain associated with circadian variation, underwent electroconvulsive therapy (ECT). After the completion of 12 ECTs, the pain markedly diminished and the pronounced ECT effect persisted over the subsequent 24-week period of observation.

### COGNITIVE BEHAVIOURAL THERAPY (CBT)

CBT is a psychotherapy based on cognitions, assumptions, beliefs, and behaviors, with the aim of influencing negative emotions that relate to inaccurate appraisal of events. The general approach, developed out of behavior modification, Cognitive Therapy and Rational Emotive Behavior Therapy, has become widely used to treat various kinds of neuroses and psychopathology, including mood disorders, anxiety disorders and burning disorders.

### COMPLETE SYSTEMS AND PRACTICES

These practices include ayurveda, homeopathy and naturopathy. Ayurveda has shown promise in BMS with the use of Daru Halad, a type of Turmeric, which is used in paste form in combination with honey for topical application. Homeopathy suggests use of Acid Nitricum or Merc Sol for BMS, both 200 potency, depending on the patient's clinical findings and history.

Naturopathic medicine emphasizes the ability of the body to heal and maintain itself. Various therapeutic methods of Naturopathy are found to minimize the effects of stress such as unfocused anxiety, depression, hypertension, chronic lethargy, infectious diseases, neuropathic pain and neuro-hormonal imbalances. Natural elements such as colors, aromas of plants, herbs and flowers find their use in treating stress related disorders.

### MIND BODY INTERACTIONS

It aims at teaching the patient to become aware of the tension and learn to relax it. These includes various therapies like humor therapy, music therapy, meditation and hypnotherapy.<sup>[24]</sup>

### BIOLOGICAL BASED THERAPIES

#### HERBAL TREATMENT

Herbal medicine tends to treat specific causes of pain and burning. Some of them includes Hypericum

perforatum extract (St. John's wort oil), willow bark tincture and Rose glycerite.

## DIETARY AND LIFESTYLE CHANGES

Preliminary studies have found that low dietary levels of vit C, vit A, vit E and fibres are associated with increased burning sensations. Therefore patients should take fruits and vegetables containing high levels of these antioxidants.

## CONCLUSION

Burning Mouth Syndrome remains an interesting, though poorly understood condition in the field of oral medicine. The first step in the management is arriving at an accurate diagnosis and ruling out all the secondary causes of this disorder. Although effective therapies have been identified in concrete cases, a treatment modality offering efficacy in most cases of BMS remains to be established.

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