

DENTINO
JURNAL KEDOKTERAN GIGI
 Vol IV. No 1. Maret 2019

**PRIMARY MANAGEMENT OF BURNING MOUTH SYNDROME FOR
 GENERAL DENTIST**

(Review article)

Rinda Prawidiastuti¹, NurIsmah Gitasari¹, Yunita Fatmala¹, Wahyu Hidayat², Indah Suasani Wahyuni²

¹Dentist Study Program, Faculty of Dentistry, Universitas Padjadjaran, Bandung, Indonesia

²Oral Medicine Department, Faculty of Dentistry, Universitas Padjadjaran, Bandung, Indonesia

ABSTRACT

Background : Burning Mouth Syndrome (BMS) or also called Burning Tongue Syndrome is a chronic idiopathic condition, where the patient complains of pain and burning on the tongue or other oral mucosa. **Purpose:** The purpose of this paper is to determine the primary management that general dentists can do for patient with burning mouth syndrome in the form of a systematic literature review. **Method:** All of the articles reviewed were obtained from PubMed, Google Scholar and Science Direct search engines which were selected for publication in the past 10 years. **Results:** From a total of 30 articles obtained, 23 articles were found to be in accordance with the inclusion criterias, such as written in English, in the form of a Full Paper and only discussed BMS without systemic disease. **Discussion:** The primary management of patients with burning mouth syndrome that can be done by a general dentist is to determine the type of BMS so that a more specific treatment plan can be obtained. General dentists can provide communication, information and education (IEC) regarding BMS, and if necessary, analgesics in the form of topical lidocaine or benzydamine hydrochloride mouth rinse 0.15% can be given to reduce symptoms but only temporary, so that they need referrals to other competent experts. **Conclusion:** General dentists need to know and learn about various primary managements of Burning Mouth Syndrome cases, so that they can carry out treatment according to their competence.

Keywords: burning mouth syndrome, general dentist, primary management

Correspondence: Indahx Suasani Wahyuni, Departemen Ilmu Penyakit Mulut, Fakultas Kedokteran Gigi, Universitas Padjadjaran, Jalan Sekeloa Selatan no 1, Bandung, Jawa Barat, email: indah.wahyuni@fkg.unpad.ac.id

INTRODUCTION

Burning Mouth Syndrome (BMS) or also called Burning Tongue Syndrome, glossodynia, glossopyrosis and stomatopyrosis is a chronic idiopathic condition, in which sufferers will complain of pain and burning on the tongue or other mucous membranes.¹ The International Association for Study of Pain defines BMS as "burning sensation on the tongue or other mucosa with a normal clinical features, not accompanied by other laboratory findings, and last for more than 4-6 months". In 2013, the international Headache Society defined BMS as "reccurent pain and

burning in oral mucosa, occurring for 2 hours per day, and more than 3 months, without any clinical findings or other lesions".^{2,3}

Patients with burning of the oral mucosa as their major complaints was one of the difficult challenges for many dentists, and although much research has been done, until now there has not been known diagnosis, etiology and the primary management for BMS. This causes many patients with BMS to be referred from general dentists to several doctors, such as oral surgery specialists, nose throat and ear specialists, dermatology and venereology specialists, even to internal medicine

specialists, so that they will cause a burden on both patients and dentists.^{4,5,6} Based on these, this article aims to provide information on primary management of BMS patients that can be performed by general dentists as a form of first treatment or management.

METHOD

Data source search is done using the PubMed, Google Scholar and Science Direct search engines. Articles are selected based on the inclusion criteria as follows: year 2008-2018 (last 10 years); use keywords as follows, Burning Mouth Syndrome, Treatment for Burning Mouth Syndrome, and Diagnosis for Burning Mouth Syndrome; provided in a full paper; and written in English, as well as the content only discussed about BMS without any systemic abnormalities or association with other lesions in the oral cavity. The search results obtained a total of 30 articles, with details of 6 articles in the form of case reports and 24 articles in the form of systematic reviews.

LITERATURE REVIEW

Epidemiology

The prevalence of BMS in the general population is around 0.7% -15%.^{7,8,9} According to Acharya et al,¹⁰ the lack of objective diagnostic criteria for BMS is one of the causes for the prevalence of BMS varies from 0.7% to 15%. BMS sufferers are dominated by women aged 50-70 years during the peri period and post menopause, usually BMS manifests 3 years before and 12 years after the start of menopause.¹¹ Men are also at risk of BMS with a ratio of 1: 7 compared to women, the difference may be influenced by biological, psychological, and socio-cultural factors.⁶ The average age at diagnosis of BMS is 59 years (range 25-90 years).¹² BMS rarely found in patients under 30 years of age and never reported in children and adolescents.⁶ There are no specific ethnic predilections or socioeconomic classes that affect the prevalence of BMS.¹³

The prevalence of BMS in Sweden in 1999 was 3.7% (1.6% of men, 5.5% of women).¹⁴ According to Slebioda and Szponar,¹⁵ the prevalence of BMS in Europe was slightly higher at around 7%, whereas in Asia it reached 2-3%, and The United States is only 0.7%. BMS with spontaneous onset was only 22.58%. Most patients complained of mild or moderate (69.8%) burning sensation on the tongue (81.1%) and throughout the day (69.2%).¹¹

Classification

Based on signs of symptoms and etiology, BMS is classified into two, namely primary or essential/idiopathic and secondary. In primary BMS, there is no etiology but there is neuropathological central or peripheral involvement. Secondary BMS is caused by pathological conditions either local or systemic. Causes include local infections, autoimmune diseases of the oral mucosa (lichen planus), lack of nutrients and vitamins, glossitis, salivary disorders, allergies, irritation due to reflux, candidiasis, nerve damage, diabetes mellitus, gastrointestinal and urogenital.^{1,3,6,8}

Based on the pattern of pain, BMS was classified into 3 types: Type 1 (35%), waking up without symptoms, but worsening throughout the day, and its intensity peaked at night. This type is usually associated with systemic disorders such as lack of nutrition and diabetes mellitus. Type 2 (55%) is characterized by continuous symptoms throughout the day and patients find it difficult to sleep, this type is associated with psychological disorders. Type 3 (10%), characterized by intermittent symptoms with asymptomatic episodes during the day, occurs only a few days and is located in an unusual location (neck). This type is usually associated with allergic reactions.^{1,6,17}

Etiology

The etiology of BMS is unknown with certainty.^{6,12} But according to some studies it can be caused by various factors, such as local factors including the condition of the oral cavity, parafunctional habits, excessive irritation of the oral cavity; or systemic factors, such as vitamin B deficiency, immune disease or allergies, use of drugs (antihistamines, neuroleptics, antihypertensive, etc.), infections, hormonal imbalances, neurological disorders, psychological factors including stress, depression, anxiety, and other factors such as salivary dysfunction, loss of taste buds, depapillation of tongue, and the effects side of radiation or chemotherapy.^{1,6,9,14,17} According to the study of Kohorst et al, smoking was said to also aggravate the occurrence of BMS.¹⁶

Clinical Symptoms

Clinical features of BMS are characterized by burning, spiciness, and itching in the oral cavity.¹⁸ Pain can be felt for more than 2 hours a day and can last for 4-6 months.

^{12,14} Locations most often occur in two-thirds anterior tongue, and can also occur on the lips, palate, gums, buccal mucosa, floor of the mouth, and oropharynx, and can occur unilaterally or bilaterally.¹⁹ The onset occurs spontaneously or can occur after dental procedures (scaling, insertion of dentures).^{7,8} BMS is reported to occur in two-thirds of patients who use removable prostheses. In addition to prostheses, other factors associated with BMS onset include tooth extraction, emotional conditions, systemic diseases, and psychological or physical changes in menopause.¹²

BMS does not show any abnormalities/lesions in intraoral and extraoral. In general, people with BMS are often followed by symptoms of xerostomia, headache, discomfort of neck and shoulders, pain in the teeth, jaw and TMJ, difficulty in speaking and opening the mouth, an increase in parafunctional activity, also a taste change in the tongue which is characterized by metallic taste, even the tongue can become numb for sufferers of BMS.^{1,3,16} In the intraoral clinical picture, it is usually found such as Erythema, Candidiasis, Lichen Planus, and Atrophic Glossitis especially in patients who have systemic abnormalities and drugs consumption.^{17,20}

Diagnosis

Dentists must be able to diagnose appropriately, whether the patient has primary or secondary BMS, so the anamnesis and history taking for the disease must be explored properly, accompanied by a thorough general examination, extraoral and intraoral conditions and supported investigations to help the dentist in making the diagnosis. Anamnesis and history taking can be done to determine the history of the disease, the quality and intensity of complaints, location, duration and whether the complaint occurs accompanied by systemic abnormalities or triggered by local or certain food factors. Dentists must be able to explore whether patients are taking drugs that can trigger xerostomia, the presence of parafunctional habits or whether the patient is in an emotional or stressful state. History of systemic conditions also really needs to be considered and carried out completely to determine whether or not that can affect BMS.^{5,6}

Some studies show patients with gastrointestinal disorders have a risk of experiencing BMS as much as 3.2 times greater than patients with normal systemic conditions. It is expected that all patients with BMS should be referred to a gastroenterologist to ascertain whether the BMS experienced is related to gastrointestinal abnormalities.⁵

Shivpuri et al,²¹ mentions fundamental inclusion criteria for which data are used as a guide for the diagnosis of BMS which includes: burning sensation every day on the oral mucosa (bilateral), burning sensation persists for 4-6 months, constant intensity, feels worse throughout the day, does not get worse when eating or drinking, and does not interfere with sleep. Intra-oral and extra-oral examinations should be performed to eliminate lesions such as erythema, erosion and tongue depapilated. BMS can be enforced if the results of the examination show that the oral cavity must be normal and there are no signs of abnormalities such as inflammation or mucous atrophy. The dentist also needs to pay attention to the prosthesis used by the patient, check the contact occlusion, or the possibility of a galvanic reaction in the oral cavity, and consider the salivary volume.^{5,7}

Laboratory tests can be carried out to support the diagnosis of BMS, including hematological examination (serum iron, serum ferritin, blood glucose level, and helicobacter pylori antibodies). Complementary examinations include folate, vitamin B12, as well as Candida culture from the oral mucosa and palate mucosa swab.^{5,7,15,22} Epicutaneous tests are performed on patients who experience intermittent symptoms (BMS type III) which can be triggered by metal or dental materials and certain food ingredients that can cause allergies. Some studies show 37.3% of BMS cases are positive for patch tests, of which the allergens most responsible for BMS are nickel sulfate hexahydrate, balsam of Peru, and gold sodium thiosulfate.^{5,7} Psychological evaluation is also important to be done because some literature states that depression and anxiety can be one of the trigger factors for BMS.^{1,8,23} Research conducted by Kim, shows that psychological factors play a role in the occurrence of BMS. This is indicated by 17.43 % of respondents were in severe depression, 33.3% of patients were in an anxiety condition, and 28.2% of patients were in certain phobic anxiety conditions.²²

Management

Because of many etiological factors of BMS and the diagnoses that cannot be established with certainty, the management of BMS cases became very difficult. There are many types of treatment and variations of drugs that can be given to patients with BMS but this treatment aims only to eliminate symptoms and definitive management has not been found yet.

Souza et al, described 4 types of management that can be given to BMS patients, including antidepressants, phytotherapeutic agents, analgesic and antiinflammatory agents. The non-

pharmacological therapies including psychological therapy also can be done as a comprehensive complement. The antidepressant agent commonly used in the case of BMS is either systemic or topical clonazepam, trazodone, paroxetine and amisulpride.¹³ Based on the literature review conducted by Souza,¹³ topical clonazepam showed the best results compared to other antidepressant agents whereas according to Nasri-Heier et al,⁷ Benzodiazepines have been used by clinical practitioners as a first line treatment for BMS and their effectiveness has been supported by several literature.

The use of oral clonazepam doses of 0.5-1.5 mg per day is reported to reduce 70% of pain. In addition to help reduce the pain, clonazepam can reduce xerostomia and taste disorders.⁷ Fenelon et al,¹⁴ mentions that clonazepam which is one of the benzodiazepines which can activate pain inhibitory pathways in the spinal cord and peripheral nociceptors. When applied topically to the oral mucosa, clonazepam decreases sensory nerve sensitivity and when given systemically provides central anxiolytic sedative and analgesic effects. Simultaneous use of systemic and topical clonazepam has been shown to reduce the intensity of pain in BMS.

Nasri-Heier et al,⁷ recommends the use of low-dose combinations of drugs such as benzodiazepines, gabapentins, and tricyclic antidepressants (TCAs) to reduce the risk of side effects in treating BMS. The use of topical clonazepam in 25 patients with a dose of 1 mg 3 times a day for 3 minutes resulted in 66% of patients reporting a reduction in symptoms, while the rest reported a reduction in some symptoms after 6 months.⁷

Another therapy that can be used is phytotherapeutic agents, the most commonly used are topical and systemic capsaicin.^{13,14} Capsaicin is an active component found in chili and has been used both topically and systemically for the management of BMS and is reported to reduce the symptoms of BMS. Topical capsaicin can affect peripheral sensory nerve fibers mediating the desensitization of efferent nociceptors and reversibly causing sensory peripheral nerve degeneration to reduce burning sensation. Some literature also mentions that capsaicin can reduce the biosynthesis of neurotransmitters so that it can inhibit sensitivity in the response of peripheral stimuli.¹⁴ The capsaicin 0.02% mouthwash used for one week in several literatures has shown significant results in overcoming burning sensation in BMS. The use of citric capsaicin 0.25% 3x/day significantly reduced pain even though 32% reported gastric pain.^{7,13}

Another treatment option is the use of anesthetics, analgesic and anti-inflammatory agents. For BMS cases, local anesthetics in the form of 5 mg bupivacaine lozenges, topical lidocaine, and benzydamine hydrochloride 0.15% mouthwash. Now topical lidocaine is the local anesthetic most often used to reduce the burning sensation without having any side effects, although temporary and in severe cases it is not very effective in curing symptoms.^{1,17} Research by Treidal et al,¹³ proved that the use of 5 mg of bupivacaine lozenges was significantly reduce the burning sensation in patients with BMS even though it was accompanied by changes in the sensory taste. This local anesthetic agent has the inhibiting or blockade character of afferent nociceptors thereby reducing the symptoms of BMS.

DISCUSSION

BMS is an abnormality in the oral mucosa with difficult treatment, because etiological factors are not yet known with certainty, so that the management can only be done to eliminate the symptoms and this is becomes a big challenge for the dentist to provide appropriate treatment for patients with BMS. In managing patients with BMS, dentists need to provide accurate and clear information to patients. The goal is that patients can fully understand that their complaints can occur to anyone, especially in elderly, and their complaints can occur spontaneously or can be triggered by certain factors either systemic or local. The dentist also needs to provide information that the patient's complaints are not related to the condition of the malignancy and the treatment takes time because detailed observations are needed.^{6,12}

When patients present with complaints of hot, burning and sore mouth, the main thing that must be done by the dentist is doing a detailed anamnesis, history taking and examination, whether the patient's complaint is accompanied by lesions or other abnormalities in the oral cavity, or without any lesions. Based on the complete investigations and examinations, the dentist must be able to identify the complaints include to the primary or secondary BMS.^{1,3}

For patients with primary BMS, the burning sensation are caused by trigeminal nerve disorders or central or peripheral neuropathy, it is necessary to have pain management and collaboration with or refer to oral medicine specialist and also neurologists. Whereas for patients with secondary BMS, general dentists must be able to eliminate intra oral or local etiological factors or triggers so that patient complaints are expected to be reduced. Some theories suggest that

local conditions in the oral cavity can aggravate the burning sensation and uncomfortable feeling, such as rough tooth surfaces, remaining teeth root, elimination of plaque and tartar, and also the condition of coated tongue. Dentists must be able to educate patients to always maintain their oral hygiene so that will always clean and feels as comfortable as possible.^{1,3,6,8}

Dentists must also be able to explore the information about the patients daily nutrition, because based on some literature, BMS has a close relationship with malnutrition and Vitamin B deficiency. If malnutrition is considered to be one of the trigger factors for complaints, dentists must be able to provide education regarding balance nutritional intake to patients and providing supportive therapy including the provision of Vitamin B complex.^{5,7,15}

Hyposalivation is also considered to be one of the main trigger factors for BMS, so dentists must be able to identify whether the patient's hyposalivation occurs due to a salivary gland disorder, or is influenced by systemic factors such as hormonal disorders in menopausal women, or diabetes mellitus which can cause xerostomia. Dentists can advise patients to consume fibrous foods or consume gum containing xylitol which can trigger the production of saliva.^{5,7,15,17,18}

If the psychological condition being suspected involved with BMS, the dentist must be able to provide education that the complaint will get worse if the patient's psychological condition is disturbed. If the situation worsens, the dentist can refer the patient to a psychologist for psychological therapy.^{8,13,22}

There are several choices of pharmacological therapy that can be given to patients with BMS, including topical antidepressants, antipsychotics and analgesics.¹³

Clonazepam topical is considered to be the most effective in the management of patients with BMS but its use is still limited in Indonesia.⁷ Topical analgesia is a choice that can be given by the dentist, because it is considered the safest with minimum side effects, although it is only temporary as an initial treatment. For example, dentists can prescribe 0.15% benzydamine hydrochloride or topical lidocaine.^{1,17} The administration of 5 mg of bupivacaine lozenges can also be selected even though sometimes accompanied by taste disturbances.¹³

When the treatment does not show satisfactory results, the dentist must immediately refer the patient to the oral medicine specialist for further treatment. It can be concluded that dentists need to know and learn a variety of primary management of Burning Mouth Syndrome cases, so

that they can carry out treatment according to their competence.

REFERENCES

1. Sunil A., Mukunda A., Gonsalves M.N., Basheer A Bin, Deepthi K. 2012. An Overview of Burning Mouth Syndrome. *Indian Journal of Clinical Practice*. 2012; 23(3):142-152.
2. Klasser G.D., Pinto A., Jonathan M., Cramer C.K., Epstein J. Defining and diagnosing burning mouth syndrome: Perceptions of directors of North American postgraduate oral medicine and orofacial pain programs. *The Journal of the American Dental Association*. 2014; 144(10):1135-1142.
3. Aggarwal A., Panat S.R. Burning mouth syndrome: A diagnostic and therapeutic dilemma. *J Clin Exp Dent*. 2014;3:180-185.
4. Al-maweri S.A., Javed F., Kalakonda B., Alaizari N.A., Al-soneidar W., Al-akwa A. Efficacy of Low Level Laser Therapy in the Treatment of Burning Mouth Syndrome: A Systematic Review. *Photodiagnosis Photodynamic Therapy*. 2016;17: 188-193.
5. Milkov M, Tonchev T, Nedev P. Diagnostic Challenges Of Burning Mouth Syndrome. *Scripta Scientifica Medica*. 2013;45(1):12-16.
6. Sadat SMA, Chowdhury NM, Baten RBA. Burning Mouth Syndrome: A Review. *J Bangladesh Coll Phys Surg*. 2016; 34: 151-159.
7. Heir CN, Zagury JG, Thomas D, Ananthan S. Burning mouth syndrome: Current concepts. *The Journal of Indian Prosthodontic Society*. 2015; 15(4) : 300-307.
8. Yoo HS, Jin SH, Lee YJ, Song CM, Ji YB, Tae K. The role of psychological factors in the development of burning mouth syndrome. *Int J Oral Maxillofac Surg*. 2018. Mar;47(3):374-378
9. Nagao Y, Kawahigashi Y, Kimura K, Sata M. Effect of Oral Care Gel for Burning Mouth Syndrome in a Patient with Hepatitis C: A Case Report. *Case Reports in Gastroenterology*. 2017 ; 11:480-487.
10. Acharya S, Carlén A, Wenneberg B, Jontell M. Clinical characterization of women with burning mouth syndrome in a case-control study. *Acta Odontologica Scandinavica*. 2018; 11:42:1-8.

11. Susana O, Piñeyro T, Munerato MC. Burning Mouth Syndrome – Latest update. *International Journal of Dentistry Research*. 2017;1(1):14-23.
12. Mitsikostas DD, Ljubisavljevic S, Deligianni CI. Refractory burning mouth syndrome: clinical and paraclinical evaluation, comorbidities, treatment and outcome. *The Journal of Headache and Pain*. 2017;18(40): 1-6.
13. Souza IF De, Mármora BC, Rados PV, Visioli F. Treatment modalities for burning mouth syndrome: a systematic review. *Clin Oral Investig*. 2018. Jun;22(5):1893-1905.
14. [Fenelon M](#), [Quinque E](#), [Arrive E](#), [Catros S](#), [Fricain JC](#). Pain-relieving effects of clonazepam and amitriptyline in burning mouth syndrome: a retrospective study. *Int J Oral Maxillofac Surg*. 2017. Nov;46(11):1505-1511.
15. Ślebioda Z, Szponar E. Burning mouth syndrome – a common dental problem in perimenopausal women. *Menopause Review/Przegląd Menopauzalny*. 2014;13(3):198-202.
16. Kohorst JJ, Bruce AJ, Torgerson RR, Louis A, Davis MDP. A Population-Based Study of the Incidence of Burning Mouth Syndrome. *Mayo Clin Proc HHS Public Access*. 2015;89(11):1545-1552.
17. Ec C, Radu A, Bi C. Burning mouth syndrome: a review on diagnosis and treatment. *Journal of Medicine and Life*. 2014;7(4):512-515.
18. Gurvits GE, Tan A. Burning mouth syndrome. *World Journal of Gastroenterology*. 2013;19(5):665-672.
19. Nagel M.A., Gilden D. Burning mouth syndrome associated with varicella zoster virus. *BMJ Case Rep*. 2016. Jul 5;2016. pii: bcr2016215953. doi: 10.1136/bcr-2016-215953.
20. Tokura T, Kimura H, Ito M, et al. Temperament and character profiles of patients with burning mouth syndrome. *J Psychosom Res*. 2015;78(5):495-498.
21. Shivpuri A, Sharma S, Trehan M, Gupta N. Burning mouth syndrome: A comprehensive review of literature. *Asian J Oral Maxillofac Surg*. 2011;23(4):161-166.
22. Kim M, Kim J, Comparison HK. Comparison between burning mouth syndrome patients with and without psychological problems. *Int J Oral Maxillofac Surg*. 2018. Jul;47(7):879-887.