UCLA
Proceedings of UCLA Health

Title

Case Report of an Integrative East-West Approach to Burning Mouth Syndrome

Permalink

https://escholarship.org/uc/item/9sv310xs

Journal

Proceedings of UCLA Health, 26(1)

Authors

Shah, Aloukika
Hu, Katie

Publication Date

2022-08-25

eScholarship.org Powered by the California Digital Library
University of California

CLINICAL VIGNETTE

Case Report of an Integrative East-West Approach to Burning Mouth Syndrome

Aloukika Shah and Katie Hu, MD

Key Words: Burning Mouth Syndrome, Traditional Chinese Medicine, Integrative Medicine, East-West Medicine, Acupuncture

Introduction

Burning Mouth Syndrome, also known as stomatodynia, is defined by the International Headache Society as an intraoral burning sensation, recurring daily for more than 2 hours/day over more than 3 months, without clinically evident causative lesions.[1]

BMS is a diagnosis of exclusion and requires extensive of other potential causes of oral burning and tongue pain including vitamin deficiencies, diabetes, esophageal reflux, Sjogren's syndrome, and dental infections to name a few.[2] As the etio-pathogenesis of BMS is not yet fully determined, management of the condition is empirical as standardized treatment approach does not yet exist.[3,4] Current pharmacologic interventions include central neuromodulators such as tricyclic antidepressants, selective serotonin reuptake inhibitors, serotonin and norepinephrine reuptake inhibitors, and benzodiazepines.[5] These neuromodulators have not always proven to be effective, and associated side effects warrant caution with their use.[5] Cognitive behavioral therapy has been shown to help with pain severity and discomfort for up to 6 months, but this required up to 12-15 sessions, which may not be financially feasible for many patients.[3]

We present a patient who after two years of BMS symptoms, sought an integrative East-West medicine approach to treat her condition. By developing an integrative protocol which encompassed acupuncture, dietary modifications rooted in TCM, and a strong focus on stress reduction, we achieved a positive treatment outcome.

Case Presentation

A 54-year-old post-menopausal female with a history of anxiety, hot flashes, hypertension, GERD, and prediabetes presents with a "tingling, sore sensation" at the center of her tongue for the past two years. The symptoms interfered with her taste of foods and could not be traced to a previous insult or injury. The patient had undergone extensive testing by otolaryngology and dentistry, including blood tests, oral cultures, and allergy testing. No underlying physiologic medical cause could be identified, and the patient was diagnosed with BMS.

She occasionally experienced GERD symptoms, however, her gastric reflux symptoms were intermittent and predated her tongue symptoms. The patient denied any weight loss, malar rash, photosensitivity, oral ulcers, fatigue, nausea, or vomiting. At the time of the initial consultation, she was 1.5 years post-menopausal and reported some hot flashes. Her review of systems was otherwise negative.

In addition to her BMS, the patient's prior medical history was significant for an overactive bladder, fibroids, an ovarian cyst, and a thyroid nodule. Her past surgical history consisted of a right thyroid lobectomy and ovarian cyst resection. She lived with her husband and worked as an executive assistant. While she denied any work-related stress, she reported significant family stress and caregiver fatigue and burden. The patient was a full-time caregiver for her 90-year-old mother who lived with her. She reported less than six hours of sleep per night and during periods of increased stress, more frequent nighttime awakenings and interrupted sleep. Her exercise consisted of using a stationary bike up to three times a week, walking, and taking the stairs. Her diet often consisted of cold and raw foods such as salads. The patient consumed three cups of coffee daily before noon and rarely consumed alcohol. She avoided sweets, spicy and salty foods, which seemed to aggravate her BMS symptoms.

Her only medication was amlodipine for hypertension.

Clinical Findings

On the initial physical exam, vital signs were within normal limits. Pertinent physical exam findings included a red tongue with slightly more redness at the tip. There was no evidence of malar rash, oral ulcers, joint tenderness or synovitis. The patient was neurologically intact. Lab studies including complete blood count, comprehensive metabolic panel, HgbA1c, and levels for Zinc, Vitamin D, iron, ferritin, and Vitamin B6 were normal. Antinuclear antibody, SS-A and SS-B antibodies, thyroid stimulating hormone, HIV ELISA, and HSV ELISA were also normal.

Therapeutic Intervention

Part One: An integrative treatment plan was initiated at the patient's first visit which focused specifically on acupuncture and nutrition informed by Traditional Chinese Medicine.

Acupuncture utilized the following main points: Stomach 5 and 6, Heart 7, Liver 2, Large Intestine 4 and 11, Small Intestine 1, and Triple Burner 1. Specific teas and drinks were recommended based on TCM including chrysanthemum, barley, and lemon balm tea and aloe vera juice. She was encouraged to eat more "cooling" foods such as green leafy vegetables, cucumber, watermelon, and mung bean and work towards decreasing her daily consumption of coffee which has more "warming" properties according to TCM nutrition.

Part Two: The second half of the patient's treatment plan involved continuing her acupuncture treatments and TCM-guided nutrition while implementing a new self-care plan to help attenuate her high-stress levels associated with caregiving for her elderly mother. Specifically, the patient adopted a daily 15-minute guided mindfulness practice through the UCLA Mindful Awareness Research Center.[6] The patient was encouraged to incorporate self-acupressure at the Large Intestine 4 acupoint for two minutes, twice a day, for stress management. To assist with poor sleep induction due to stress and anxiety, she was instructed to use 20-40 drops of lemon balm extract before bedtime.

Follow-up and Outcomes

By the patient's fifth visit, she had received four treatments of acupuncture every 2 weeks, incorporated aloe vera juice, chrysanthemum and barley teas, and cut down her coffee consumption. The patient reported a 40% reduction in her BMS symptoms. She continued to avoid spicy, sweets, dairy, and salty foods which exacerbated her symptoms.

With the additional focus on self-care and stress management in subsequent visits, including daily acupressure, guided mindfulness meditation, and lemon balm extract prior to bed for sleep, the patient reported an 80% and 90% reduction of her BMS symptoms by her 8th and 9th clinic visit respectively.

Discussion

Burning Mouth Syndrome remains to be an unexplained oral syndrome with difficult diagnosis and treatment.[5] The prognosis of BMS is dependent on the underlying cause and a patient's comorbidities.[7] Our patient had a negative evaluation for other etiologies such as HSV, HIV, oral candidiasis, Sjogren's syndrome, GERD, vitamin deficiencies, and diabetes, with underlying cause of her BMS remaining idiopathic. Our integrative East-West approach utilizes acupuncture, TCM nutrition, and evidence-based integrative therapies. After two years of worsening symptoms, the positive outcomes after implementation of our protocol highlights the benefit of a patient-centered, holistic approach to chronic disease management. Our approach accounts for a patient's lifestyle, psychosocial environment, nutrition, and stress management as fundamental factors in the healing process.

From the perspective of Traditional Chinese Medicine, BMS is a condition resulting from "Heat or Fire," due to Yin deficiency.[8] Yin is the energy responsible for moistening and cooling bodily functions. When this energy is deficient, the balance is thrown off and a person's body becomes hot and dry. Yin deficiency is further exacerbated during menopause due to hormone shifts which further exacerbate heat symptoms in the body (night sweats, hot flashes) and can therefore contribute to symptoms such as BMS. Patients are counseled to limit or avoid foods with more warming or "hot" properties. Onions, garlic, and spicy foods are inherently warming in TCM and would exacerbate symptoms. Other foods to avoid include acidic foods and liquids—such as tomatoes, coffee, and alcohol. Patients are also advised to limit foods that can exacerbate inflammation such as highly processed, fried, high in sugar, saturated, or trans-fat containing foods.[9] Patients are encouraged to consume foods that may nourish Yin such as grains (e.g. barley), fruits (e.g. watermelons, nectarines, pomegranates), nuts and seeds (e.g. coconuts, sesame seeds, walnuts), and supplements (e.g. royal jelly). Foods that help cool the body may also be beneficial for symptomatic relief which is why, liquids such as aloe vera juice and chrysanthemum tea were recommended.

In clinical practice, acupuncture presents as a promising therapy in patients with BMS. In a recent prospective observational study, 30 BMS patients were treated with acupuncture therapy based in TCM in order to evaluate if acupuncture could decrease the sensation of burning by affecting oral microcirculation.[10] Utilizing videocapillaroscopy, the study demonstrated the ability of acupuncture to increase capillary tortuousness and density while decreasing arborescence and reducing burning sensation.[10] Acupuncture's effect on oral microcirculation led to changes in vascular patterns that were associated with a significant reduction in burning symptoms following three weeks of therapy and sustained reduction of symptoms for 18 months after acupuncture use.[10]

While acupuncture and TCM-guided dietary modifications helped our patient achieve up to 40% symptom reduction, it was the final component of lifestyle optimization, in particular stress and sleep management which enabled her to optimize her clinical results. Compared to the general population, it has also been found that BMS patients have a greater incidence of psychological disturbances.[3] A systematic review of 14 studies identified anxiety and depression as the most common comorbid disorders in this population.[11] Another factor to consider in the etiopathogenesis of our patient's BMS, is her recent post-menopausal status which adds an additional physiological stressor on her body. As Woda et al. proposes, a decreased production of neuroactive steroids from chronic anxiety or post-traumatic stress, in conjunction with the loss of gonadal steroids during menopause can lead to "neurodegenerative alterations of small nerve fibers of the oral mucosa and/or some brain areas involved in oral somatic sensations."[12]

In our patient, the chronic stress associated with caring for an elderly family member in addition to a full-time job, recent hormonal changes related to menopause, and poor sleep likely

overwhelmed her system. All these factors may have been contributory to the development of BMS.

By addressing our patient's underlying risk factors for BMS, including her chronic stress and poor sleep regimen, we were able to address the root causes of dysregulation in the body. As summarized by Hannibal et al, "the chronic reactivation of a sensitized stress response exhausts the hypothalamic pituitary adrenal axis, and cortisol dysfunction is commonly implicated in idiopathic pain and inflammation."[13] A growing body of evidence across multiple models and disease states support the association between chronic stress and increased levels of systemic inflammation.[14] Individuals with chronic stress conditions such as depression have elevated plasma levels of CRP[15,16] and IL6[17] two of the most significant markers of systemic inflammation. We addressed our patient's chronic stress and subsequent systemic inflammation by incorporating self-acupressure and mindfulness meditation practice into her daily routine in addition to her acupuncture treatments. A systematic review evaluating 20 randomized control trials with over 1600 participants, identified at least three studies demonstrating mindfulness meditation to be associated with decreased levels of inflammatory markers in the body including NF-kB and CRP.[18] Acupressure has also been shown to significantly reduce chronic stress conditions such as anxiety and depression, as demonstrated by a randomized controlled trial investigating its use in patients on hemodialysis.[19] Clinical research investigating the role of acupuncture for the treatment of anxiety identifies the effective outcomes and reduced side effects associated with this treatment.[20]

Disrupted sleep has also been associated with systemic inflammation. As Irwin et al, demonstrates in a systematic review of 72 studies, disrupted sleep and more specifically shorter sleep durations, defined as less than 7 hours per night are associated with higher levels of CRP.[21] Improved sleep hygiene may prevent the increase in markers of systemic inflammation associated with sleep disturbance.[21] Among different integrative modalities, acupuncture has been shown to help with insomnia and poor sleep.[22] We aimed to further optimize her sleep with the use of lemon balm extract or *Melissa officinalis* L. Chronic administration has helped stress related effects such as anxiety and insomnia.[23]

Conclusion

Both the physical and psychological impact of Burning Mouth Syndrome can cause significant distress to a patient. The unclear etiology and lack of definitive practice guidelines can be challenging for providers as well. Current options for BMS therapy are primarily based on pharmacotherapy. We report a successful case using the integrative model of treatment, incorporating acupuncture, TCM nutrition and diet, and stress reduction as complementary measures in managing a patient with BMS.

REFERENCES

1. Burning Mouth Syndrome (BMS). ICHD. [Internet] Available at: https://ichd-3.org/13-painful-cranial-neuropathies-and-other-facial-pains/13-11-persistent-idiopathic-facial-pain-pifp/. Published February 6, 2018. Accessed October 12, 2021.
2. **Waldman SD**. Chapter 16: Burning Mouth Syndrome. In: *Atlas of Uncommon Pain Syndromes*. Philadelphia, PA: Saunders/Elsevier; 2014.
3. **Ritchie A, Kramer JM**. Recent Advances in the Etiology and Treatment of Burning Mouth Syndrome. *J Dent Res*. 2018 Oct;97(11):1193-1199. doi: 10.1177/00220345 18782462. Epub 2018 Jun 18. PMID: 29913093.
4. **Kim Y, Yoo T, Han P, Liu Y, Inman JC**. A pragmatic evidence-based clinical management algorithm for burning mouth syndrome. *J Clin Exp Dent*. 2018 Apr 1;10(4):e321-e326. doi: 10.4317/jced.54247. PMID: 29750091; PMCID: PMC5937967.
5. **Tu TTH, Takenoshita M, Matsuoka H, Watanabe T, Suga T, Aota Y, Abiko Y, Toyofuku A**. Current management strategies for the pain of elderly patients with burning mouth syndrome: a critical review. *Biopsychosoc Med*. 2019 Jan 31;13:1. doi: 10.1186/s13030-019-0142-7. PMID: 30733824; PMCID: PMC6357406.
6. UCLA Health. Guided Meditations. UCLA Mindful Awareness Research Center. [Internet] Available at: https://www.uclahealth.org/marc/mindful-meditations/. Retrieved October 16, 2021.
7. **Bookout GP, Ladd M, Short RE**. Burning Mouth Syndrome. 2022 Apr 30. In: *StatPearls [Internet]*. Treasure Island (FL): StatPearls Publishing; 2022 Jan–. PMID: 30137814.
8. How Do You Treat *Burning Mouth Syndrome* in Your Practice? *Med Acupunct*. 2019 Feb 1;31(1):49-56. doi: 10.1089/acu.2019.29107.cpl. Epub 2019 Feb 7. PMID: 32952785; PMCID: PMC7497973.
9. **Wongvibulsin S, Lee SS, Hui KK**. Achieving Balance Through the Art of Eating: Demystifying Eastern Nutrition and Blending it with Western Nutrition. *J Tradit Complement Med*. 2012 Jan;2(1):1-5. doi: 10.1016/s2225-4110(16)30065-7. PMID: 24716109; PMCID: PMC3943006.
10. **Scardina GA, Ruggieri A, Provenzano F, Messina P**. Burning mouth syndrome: is acupuncture a therapeutic possibility? *Br Dent J*. 2010 Jul 10;209(1):E2. doi: 10.1038/sj.bdj.2010.582. Epub 2010 Jul 2. PMID: 20596066.
11. **Galli F, Lodi G, Sardella A, Vegni E**. Role of psychological factors in burning mouth syndrome: A systematic review and meta-analysis. *Cephalalgia*. 2017 Mar;37(3):265-277. doi: 10.1177/0333102416646769. Epub 2016 Jul 11. PMID: 27121358.
12. **Woda A, Dao T, Gremeau-Richard C**. Steroid dysregulation and stomatodynia (burning mouth syndrome). *J Orofac Pain*. 2009 Summer;23(3):202-10. PMID: 19639097.

13. **Hannibal KE, Bishop MD**. Chronic stress, cortisol dysfunction, and pain: a psychoneuroendocrine rationale for stress management in pain rehabilitation. *Phys Ther*. 2014 Dec;94(12):1816-25. doi: 10.2522/ptj.20130597. Epub 2014 Jul 17. PMID: 25035267; PMCID: PMC4263906.
14. **Liu YZ, Wang YX, Jiang CL**. Inflammation: The Common Pathway of Stress-Related Diseases. *Front Hum Neurosci*. 2017 Jun 20;11:316. doi: 10.3389/fnhum.2017.00316. PMID: 28676747; PMCID: PMC5476783.
15. **Ford DE, Erlinger TP**. Depression and C-reactive protein in US adults: data from the Third National Health and Nutrition Examination Survey. *Arch Intern Med*. 2004 May 10;164(9):1010-4. doi: 10.1001/archinte.164.9.1010. PMID: 15136311.
16. **Danner M, Kasl SV, Abramson JL, Vaccarino V**. Association between depression and elevated C-reactive protein. *Psychosom Med*. 2003 May-Jun;65(3):347-56. doi: 10.1097/01.psy.0000041542.29808.01. PMID: 12764206.
17. **Maes M, Bosmans E, De Jongh R, Kenis G, Vandoolaeghe E, Neels H**. Increased serum IL-6 and IL-1 receptor antagonist concentrations in major depression and treatment resistant depression. *Cytokine*. 1997 Nov;9(11):853-8. doi: 10.1006/cyto.1997.0238. PMID: 9367546.
18. **Black DS, Slavich GM**. Mindfulness meditation and the immune system: a systematic review of randomized controlled trials. *Ann N Y Acad Sci*. 2016 Jun;1373(1):13-24. doi: 10.1111/nyas.12998. Epub 2016 Jan 21. PMID: 26799456; PMCID: PMC4940234.
19. **Hmwe NT, Subramanian P, Tan LP, Chong WK**. The effects of acupressure on depression, anxiety and stress in patients with hemodialysis: a randomized controlled trial. *Int J Nurs Stud*. 2015 Feb;52(2):509-18. doi: 10.1016/j.ijnurstu.2014.11.002. Epub 2014 Nov 11. PMID: 25468282.
20. **Amorim D, Amado J, Brito I, Fiuza SM, Amorim N, Costeira C, Machado J**. Acupuncture and electroacupuncture for anxiety disorders: A systematic review of the clinical research. *Complement Ther Clin Pract*. 2018 May;31:31-37. doi: 10.1016/j.ctcp.2018.01.008. Epub 2018 Jan 31. PMID: 29705474.
21. **Irwin MR, Olmstead R, Carroll JE**. Sleep Disturbance, Sleep Duration, and Inflammation: A Systematic Review and Meta-Analysis of Cohort Studies and Experimental Sleep Deprivation. *Biol Psychiatry*. 2016 Jul 1;80(1):40-52. doi: 10.1016/j.biopsych.2015.05.014. Epub 2015 Jun 1. PMID: 26140821; PMCID: PMC4666828.
22. **Cao H, Pan X, Li H, Liu J**. Acupuncture for treatment of insomnia: a systematic review of randomized controlled trials. *J Altern Complement Med*. 2009 Nov;15(11):1171-86. doi: 10.1089/acm.2009.0041. PMID: 19922248; PMCID: PMC3156618.
23. **Cases J, Ibarra A, Feuillère N, Roller M, Sukkar SG**. Pilot trial of Melissa officinalis L. leaf extract in the treatment of volunteers suffering from mild-to-moderate anxiety disorders and sleep disturbances. *Med J Nutrition Metab*. 2011 Dec;4(3):211-218. doi: 10.1007/s12349-010-0045-4. Epub 2010 Dec 17. PMID: 22207903; PMCID: PMC3230760.