Relief of Post-COVID-19 Burning Mouth Syndrome with Osteopathic Manipulative Treatment: A Case Study

Elisabeth L. Frankini, MPH, OMS-III, Adena Leder, DO, FAAN, Sheldon C. Yao, DO, FAAO

New York Institute of Technology College of Osteopathic Medicine, Old Westbury, NY

BACKGROUND

- Burning mouth syndrome (BMS) is a rare condition consisting of a burning sensation of the oral mucosa of unknown etiology without physical examination findings. [1]
- The prevalence rate of BMS ranges from 0.7% - 4.6% of the general population and increases with increasing age within both sexes.[1]
- Patients may have other symptoms including difficulty speaking, headache (HA), temporomandibular disorder (TMD), and muscular jaw weakness.[1]
- BMS may be linked to decreased estrogen, exposure to certain pathogens and irritants, diabetes mellitus (DM), other peripheral neuropathies and neuropsychiatric conditions.[2]
- Treatment methods include benzodiazepines and antidepressants.[2]
- Although there is no documentation of OMT being utilized to treat BMS, OMT has been shown to be effective in treating TMD and HA.[3,4]

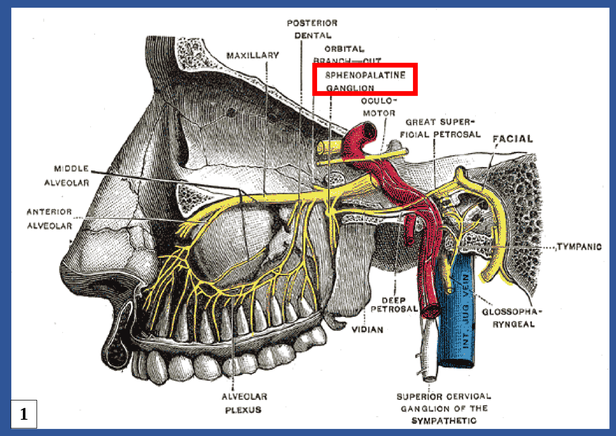
HYPOTHESIS

Osteopathic manipulative treatment (OMT) will improve BMS symptoms associated with post-COVID 19.

CASE

EZ is a 71-year-old male who was referred to the clinic by his neurologist for left-sided burning mouth sensation for 2 weeks. He also complains of intermittent strange senses of smell, right-sided jaw tightness and muscle spasms and pain. Patient has had bilateral botulinum toxin injections, which has helped with the tightness, but still complains of discomfort. Previously, the patient experienced the burning tongue sensation for over one year after being diagnosed with COVID-19 in March 2020, which spontaneously resolved. He reports no recent change in oral products or illness. EZ avoids spicy and acidic foods. He uses Mylanta 4 times/day to alleviate pain. Patient reports 2/10 pain at time of visit and 8/10 pain at its worst.

PMHx: DM II, Barrett's esophagus, gastroesophageal reflex disease, gout, hypercholesterolemia, hypertension, benign prostatic hyperplasia, multiple tendonitis.
PSHx: Trigger finger release, orthopedic surgeries in feet, tonsillectomy
Medications: clonazepam 0.5g disintegrating tablet TID, aspirin 81mg QD, allopurinol 300mg QD, dexlanoprazole 60mg QD, rosuvastatin 10mg QD, losartan 50mg QD, diclofenac topical 1% gel BID.
Social Hx: Never smoker. No alcohol. Dentist. Independent ADLs.
Allergies: Penicillin, Sulfadiazine, Clindamycin.
Vital Signs: T: 97 F HR: 63 RR: 12 BP: 135/80
General: AAOx3, Pleasant affect
HEENT: NCAT, PERRLA, EOMI, right jaw tenderness, decreased jaw opening and right jaw deviation
Cardiac: RRR, + S1 S2, no M/R/G
Pulmonary: CTAB/L, no W/R/R
Abdomen: soft, NT, ND, +BS
Extremities: decreased right shoulder abduction, no cyanosis/edema



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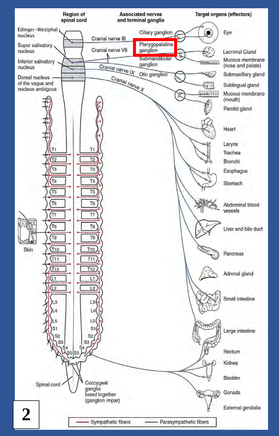

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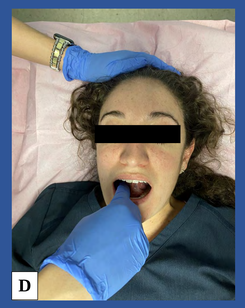
OSTEOPATHIC STRUCTURAL EXAMINATION

REGION	STRUCTURAL FINDINGS	TREATMENT
Head	• Sphenobasilar synchondrosis (SBS) compression • R condylar compression • R dural strain • R lateral pterygoid restriction • L sphenopalatine congestion • L posterior tongue root restriction	• Oculocervical release • Intraoral lateral pterygoid inhibition • Intraoral SBS release • Sphenopalatine ganglion release • Tongue root inhibition
Cervical	• Decrease R rotation & side bending • C1 anterior tenderpoint • Anterior cervical fascia restriction	• Muscle energy
Thoracic	• Cervicothoracic compression • Increased thoracic kyphosis • B/L exhaled upper ribs • B/L inhaled lower ribs	• Thoracic outlet release • Rib raising • Balance ligamentous tension
Sacrum	• R on R forward sacral torsion • B/L sacroiliac compression L > R	• Balance ligamentous tension • Lumbosacral decompression • Sacral rock

A

C



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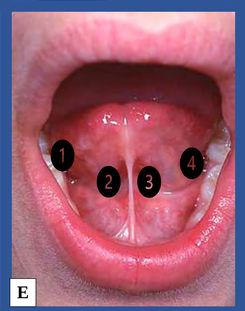
B

1: Innervation of face with Sphenopalatine ganglion highlighted
2: Parasympathetic nervous system with pterygopalatine ganglion (also known as sphenopalatine ganglion) highlighted
3: Skull foramina with pertinent cranial nerves highlighted
4: Innervation of the tongue

A: Left-sided Sphenopalatine Ganglion Release
B: Intraoral SBS Release
C: Thoracic Outlet release
D: Tongue Root Inhibition
E: Points treated with Tongue Root Inhibition



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RESULTS

At one week follow up, patient self-reported:

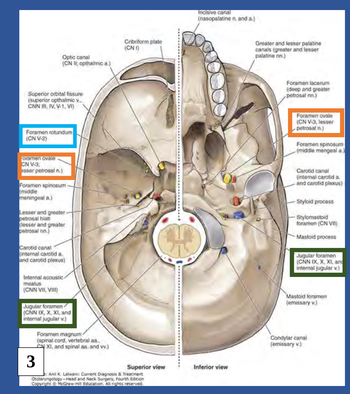
- No burning sensation for 4 days after treatment
- 80% overall decrease in discomfort
- Ceased use of Mylanta for 4 days after treatment
- Resumed Mylanta use 1-2 times/day
- Rates pain 2/10 at the worst

DISCUSSION

This case illustrates the potential for OMT to help decrease pain and reduce antacid use in BMS. Application of OMT following the osteopathic treatment models can help explain potential mechanisms for improvement.

Treating key dysfunctions of the cranium, spine, and specifically of the tongue root, addressed the biomechanical model and allowed for proper motion and function. Addressing the cranial base and SBS dysfunctions may have influenced cranial nerves V (trigeminal) and X (vagus) to reduce potential impingements as they traversed associated foramina to innervate the tongue (Fig. 3&4). Balancing autonomics through sphenopalatine ganglion inhibition (Fig. 1&2), cranial and cervical treatments to address vagal tone and rib raising to address the sympathetic chain may have also helped to modulate function and pain.

Limitations to this study include subjective measurements of patient improvement of pain, small sample size and an unclear pathophysiology associated with BMS.



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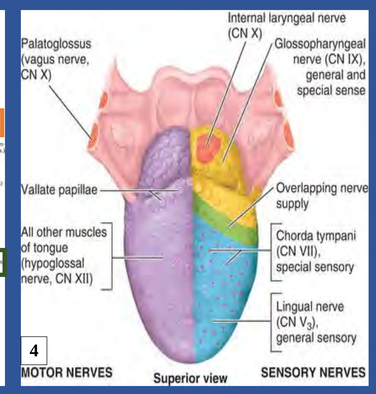

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CONCLUSION

BMS is a rare debilitating disorder with little known treatments. OMT was beneficial in helping to alleviate pain and decrease medication use in this case. Future studies can utilize more objective somatosensory testing and further study the efficacy of OMT in patients with BMS.

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