

BURNING MOUTH

Treatment options for burning mouth syndrome



BACKGROUND

Burning mouth syndrome (BMS) manifests as pain and a burning sensation of the oral soft tissues, most often the tongue, but also the lips, palate, gums, and buccal mucosa. Sometimes the floor of the mouth and oropharynx are involved. The diagnosis is made with intact oral mucosa and must rule out chronic orofacial pain and painful oral diseases that injure the mucosa as well as systemic conditions, such as hormonal changes, vitamin deficiencies, and diabetes, along with the use of certain medications. The cause is unknown at this point, making adequate treatment challenging. A systematic review of the therapeutic options was conducted to determine the best treatment for BMS.

METHODS

Randomized clinical trials published between 1996 and 2016 were sought in the PubMed, Embase, and SciELO databases. A total of 29 papers were included in the analysis and allotted to 5 subcategories based on the type of treatment studied. These included antidepressants, alpha-lipoic acid (ALA), phytotherapeutic agents, analgesics and anti-inflammatory agents, and non-pharmacological treatments.

RESULTS

Antidepressants

Topical or oral antidepressants were studied in 6 papers. Two used systemic clonazepam and acupuncture, 2 used topical clonazepam, 1 used trazodone, and 1 compared paroxetine to sertraline hydrochloride and amisulpride. Treatment time ranged from 4 to 9 weeks. Drowsiness and dizziness were the most common adverse effects of treatment. Improved conditions were noted when topical clonazepam was used. In addition, paroxetine, sertraline hydrochloride, and amisulpride improved symptoms to similar levels. No effectiveness was noted for trazodone.

ALA

The human body produces small amounts of ALA, which is essential in the function of various oxidative enzymes involved in metabolism. Seven papers tested the effectiveness of ALA for the treatment of BMS. ALA was given systemically at concentrations between 400 and 800 mg, divided into 2 or 3 doses daily. Most studies lasted 2 months. Two reported gastrointestinal discomfort. Only 1 study found no significant reduction in

burning after treatment. However, ALA was better than placebo in 4 studies.

Phytotherapeutic agents

Seven papers evaluated natural substances that were administered topically or systemically, with each study focusing on a different one. These included Catuama, capsaicin 0.02% oral rinse, 2% chamomile gel, urea 10%, lycopene-enriched virgin olive oil spray, a tongue protector associated with 0.5 mL of Aloe Vera 70%, and *Hypericum perforatum* extract 300 mg. All of the substances improved symptoms and produced minimal side effects. One patient became drowsy and gained weight, 1 suffered insomnia, and 2 had burning after using capsaicin 0.02% oral rinse. The relief of symptoms with any of these approaches was not statistically different from that obtained with placebo/control groups.

Analgesic and Anti-inflammatory Agents

Medications in this group included topical anesthesia with 5 g bupivacaine lozenges, topical anesthesia with lidocaine, oral administration of Lafutidine 10 mg associated with gargling with azulene 4%, and Benzydamine hydrochloride 0.15% oral rinse. The adverse effects included burning sensation with bupivacaine and placebo and minimal effects with Lafutidine. A statistically superior response was achieved with 5 mg bupivacaine lozenges and Lafutidine 10 mg compared to placebo. Topical lidocaine and Benzydamine hydrochloride 0.15% rinse showed no significant effect.

Nonpharmacological Therapies

Seven papers reported treatments that did not fit into any of the other categories. These included laser techniques, repetitive transcranial magnetic stimulation (rTMS), acupuncture, tongue

Clinical Significance

In several studies, both the treatment and the placebo achieved similar relief of symptoms. Few of the treatments showed significant results, so more research is needed. In addition to identifying the treatment, it will be important to determine the length of time the treatment should be used and any follow-up period that should be observed.

protectors, and psychotherapy. Side effects were only noted with rTMS and consisted of headache at the beginning of the study. A statistically significant improvement in symptoms was achieved with laser techniques and the tongue protector. Improvements that did not reach statistical significance were noted with acupuncture, use of a tongue protector with or without *Aloe Vera* 70%, and the infrared laser. Psychotherapy achieved no symptom improvement.

DISCUSSION

In addition to the difficulties associated with determining the cause of BMS, there is difficulty determining what the best course

of treatment is. None of the treatments investigated to date has achieved total relief or even a satisfactory result based on evidence-based research. More studies with larger samples are needed before the best treatment for BMS will be identified.

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DENTAL CARIES

Micro-invasive methods of treatment



BACKGROUND

Cariou lesions are traditionally treated by removing all the carious hard tissue and replacing it with a restoration. However, this leads to the cycle of replacing restorations and involves further destruction of tooth structure. The focus of modern dentistry is to control caries and carious lesions with minimally invasive methods. Noninvasive (NI) strategies remove no carious tissue and include control of dietary intake, biofilm, and demineralization or remineralization. These efforts are often combined. Micro-invasive treatment methods remove a few micrometers of tissue during the application, which involves acid etching of the tooth surface, then installing a diffusion barrier on (sealing) or within (infiltration) the carious tissue. The barrier halts acid diffusion into hard tooth tissues and stops mineral loss, which arrests the carious lesion. Restoring early proximal caries sacrifices an especially large amount of sound tooth tissue. In addition, proximal restorations have lower survival rates than non-proximal lesions, so NI or micro-invasive treatments are especially applicable. Dentists have been slow to move to NI or micro-invasive approaches, likely because of a lack of clear evidence of their effectiveness. A systematic review was done to compare the micro-invasive treatments (sealing and infiltration) with NI treatment to determine which is the better choice.

METHODS

The review of Medline via PubMed, Embase via Ovid, and Cochrane Central databases identified 15 reports of 13 split-mouth randomized controlled trials comparing micro-invasive strategies against each other, NI, or placebo for the management of proximal carious lesions. The synthesis used pairwise and network meta-analysis (NMA), with trial sequential analysis (TSA) used to assess the qualitative and quantitative sufficiency of the evidence to make robust conclusions.

RESULTS

The studies covered 486 participants and 1748 treated lesions from 7 countries. Most were done in university dental clinics, but 1 study was a practice-based trial. Four trials assessed primary tooth lesions and 9 investigated permanent teeth. High-risk patients were the subjects of 4 studies, with the remainder including moderate to high or mixed caries risk patients or were lacking that information. No relevant adverse effects were seen with either sealing or infiltration. Seven studies compared sealing and infiltration against NI and 1 compared both micro-invasive strategies against each other.

Pairwise meta-analysis and TSA found firm evidence indicating that sealing/infiltration together were more efficacious than NI and that sealing and infiltration were separately superior to NI treatment. Infiltration and sealing efficacy did not differ significantly.

Findings revealed that sealing or infiltration rather than NI would avoid 278 per 1000 treated lesions from progressing. Sealing would avoid the progression of 282 lesions per 1000 compared to NI, and infiltration would avoid the progression of 266 lesions

Clinical Significance

Sealing and infiltration retain more tooth tissue intact and cost less over the lifetime of patients, since they don't have to continually replace restorations. Dentists should be thinking of these approaches and considering micro-invasive treatments for early proximal lesions, taking into account the specifics of each dentition and patient. It's time to move beyond simply restoring lesions that could be managed with minimally invasive methods that act preventively.