ORIGINAL RESEARCH PAPER

Dental Science

COMPARITIVE STUDY OF EFFICACY OF SYSTEMIC AND TOPICAL CAPSAICIN IN SYMPTOMATIC RELIEF FOR BURNING MOUTH SYNDROME.

KEY WORDS: Burning mouth syndrome, topical capsaicin, systemic capsaicin

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ABSTRACT

Objective: present study discusses about the comparative efficacy of systemic and topical capsaicin in symptomatic relief for burning mouth syndrome.

Material & methods: study was conducted on 60 patients who presented with burning sensation in tongue and other oral sites along with absence of any other clinical and laboratory findings.30 patients were administered with systemic capsaicin only while other 30 were administered with topical preparation 0.02% and follow up done for 3 months.

Result: Systemic capsaicin is therapeutically effective for the short-term treatment of BMS but with major gastrointestinal side-effects. Topical capsaicin rinse may be beneficial in treating BMS, with over 75% of the patients reporting in improvement of symptoms after 8 week of therapy without significant side effects.

Conclusion: both systemic and topical capsaicin have similar efficacy in relieving symptoms for BMS with gastric side effect in case of systemic capsaicin and bitter taste for topical.

INTRODUCTION

Burning mouth syndrome is characterized by a burning sensation in the tongue or other oral sites, usually in the absence of clinical and laboratory findings[2,3]. There has also been no clear consensus on the aetiology, pathogenesis or treatment[1]. Classically, burning mouth syndrome (BMS) is accompanied by gustatory disturbances (dysgeusia, parageusia) and subjective xerostomia. By definition, no macroscopic alterations in oral mucosa are apparent[18]. Affected patients often present with multiple oral complaints, including burning, dryness and taste alterations. There has also been no clear consensus on the aetiology, pathogenesis or treatment of burning mouth syndrome[4]. As a result, patients with inexplicable oral complaints are often referred from one health care professional to another without effective management[4]. Burning mouth complaints are reported more often in women, especially after menopause. Typically, patients awaken without pain but note increasing symptoms through the day and into the evening. Conditions that have been reported in association with burning mouth syndrome include chronic anxiety or depression, various nutritional deficiencies, type 2 diabetes (formerly known as non–insulin-dependent diabetes) and changes in salivary function. However, these conditions have not been consistently linked with the syndrome, and their treatment has had little impact on burning mouth symptoms. Recent studies have pointed to dysfunction of several cranial nerves associated with taste sensation as a possible cause of burning mouth syndrome. Given in low dosages, benzodiazepines, tricyclic antidepressants or anticonvulsants may be effective in patients with burning mouth syndrome. Topical capsaicin has been used in some patients[1].

MATERIAL AND METHOD

This study was conducted on 60 patients attending the OPD of Department of Dentistry.

Criteria for inclusion of patient:

1. Patients had burning sensation in the tongue or other oral sites
2. absence of any other clinical and laboratory findings
3. Symptoms present for at least 4-6 months.
4. Patients were not being treated with any other medications like benzodiazepines, tricyclic antidepressants or anticonvulsants.
5. Patients were not on any other phytotherapy or palliative therapy.

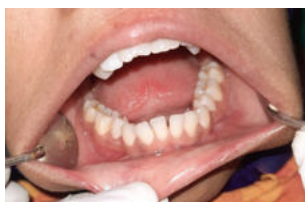

Fig 1: clinically normal oral mucosa, still patient reports with burning sensation in oral cavity.

30 Patients were administered with systemic capsaicin 0.30% while other group of 30 patients were given capsaicin 0.02% oral rinse .Visual analogue scale was used to measure the severity of pain in the two groups at trial entry and after 3 months. Fisher's exact test was used to compare the results for the two groups. Statistical significance was considered for a P value<0.05. Data was expressed as a mean +- SD.

RESULT

VAS score was similar in both the groups with systemic capsaicin having a score of 5.42+_ 1.13 while topical capsaicin oral rinses score 5.74+_ 1.6. 12 (40%) cases reported gastric side effects with systemic capsaicin while 10 patients (33.3%) on oral rinse reported with bitter taste.

DISCUSSION

Burning mouth syndrome is characterized by a burning sensation in the tongue or other oral sites, usually in the absence of clinical and laboratory findings[2,3]. There has also been no clear consensus on the aetiology, pathogenesis or treatment[1].

Based on the makeup of most studies published to date, oral burning appears to be most prevalent in postmenopausal women[5].The overall prevalence is roughly 4%[20]. Similar prevalence were found in a literature review by Wu et al,

although the investigators reported the overall pooled prevalence of burning mouth syndrome (BMS) in the worldwide general population to be 1.73%. This prevalence was found to vary by region, being 1.05% in Asia, 1.10% in North America, and 5.58% in Europe. The prevalence in the general female population was estimated to be 1.15%, compared with 0.38% in the general male population. Moreover, older age was also seen here to increase the risk of burning mouth syndrome (BMS), with the prevalence being 1.92% in people under age 50 years and 3.31% in those over 50 years[21].

In more than one half of patients with burning mouth syndrome, the onset of pain is spontaneous, with no identifiable precipitating factor.Approximately one third of patients relate time of onset to a dental procedure, recent illness or medication course (including antibiotic therapy) pain onset, once the oral burning starts, it often persists for many years[6].

Burning mouth pain is often absent during the night but progressively increases throughout the day and into the evening[1].The burning sensation often occurs in more than one oral site, with the anterior two thirds of the tongue, the anterior hard palate and the mucosa of the lower lip most frequently involved[5].Facial skin is not usually affected. Perhaps because of sleep disturbances, constant pain, or both, patients with oral burning pain often have mood changes, including irritability, anxiety and depression[2].

Spontaneous partial recovery within six to seven years after onset has been reported in up to two thirds of patients, with recovery often preceded by a change from constant to episodic burning[5,7].

Most studies have found that oral burning is frequently accompanied by other symptoms, including dry mouth and altered taste[5].Alterations in taste occur in as many as two thirds of patients and often include complaints of persistent tastes (bitter, metallic, or both) or changes in the intensity of taste perception. Dysgeusic tastes accompanying oral burning are often reduced by stimulation with food[5,8].

Personality and mood changes (especially anxiety and depression) have been consistently demonstrated in patients with burning mouth syndrome and have been used to suggest that the disorder is a psychogenic problem[9]. However, psychological dysfunction is common in patients with chronic pain and may be the result of the pain rather than its cause.

Patients with burning mouth syndrome often have high blood glucose levels, but no consistent or causal relationship has been documented[10]. Nutritional deficiencies (vitamins B1, B 2 and B6, zinc, etc.) are other findings that are not consistently supported by the literature[8].

Hormonal changes are still considered to be important factors in burning mouth syndrome, although there is little convincing evidence of the efficacy of hormone replacement therapy in postmenopausal women with the disorder[11].

However, most salivary flow rate studies in affected patients have shown no decrease in unstimulated or stimulated salivary flow[5].Studies have demonstrated alterations in various salivary components, such as mucin,IgA,phosphates, pH and electrical resistance[5].The relationship of these changes in salivary composition to burning mouth syndrome is unknown, but the changes may result from altered sympathetic output related to stress[6],or from alterations in interactions between the cranial nerves serving taste and pain sensation[11].

It has been suggested that damage to taste might also be associated with loss of central inhibition of trigeminal-nerve afferent pain fibres, which can lead to oral burning symptoms[13].

Candidal infections are also purported to cause burning mouth syndrome.5Case reports have linked burning mouth symptoms to the use of angiotensin-converting enzyme (ACE) inhibitors[14-16].Once these medications were reduced or discontinued, oral burning was found to remit within several weeks.

Burning mouth syndrome (BMS) is a clinical diagnosis made via the exclusion of all other causes. No universally accepted diagnostic criteria, laboratory tests, imaging studies or other modalities definitively diagnose or exclude burning mouth syndrome (BMS).

In a classification by etiology or cause, idiopathic burning mouth syndrome (BMS) is considered "primary BMS" (or "true BMS"), whereas "secondary BMS" has an identifiable cause.

Another classification of burning mouth syndrome (BMS) is based on symptoms, stratifying cases into 3 types, as follows:[18]

- Type 1 burning mouth syndrome (BMS): Patients have no symptoms upon waking, with progression throughout the day. Night time symptoms are variable. Nutritional deficiency and diabetes may produce a similar pattern.
- Type 2 burning mouth syndrome (BMS): Patients have continuous symptoms throughout the day and are frequently asymptomatic at night. This type is associated with chronic anxiety.
- Type 3 burning mouth syndrome (BMS): Patients have intermittent symptoms throughout the day and symptom-free days. Food allergy is suggested as a potential mechanism.

The treatment of burning mouth syndrome is usually directed at its symptoms. The medical management of burning mouth syndrome follows the example of other neuropathic pain conditions and includes low dosages of benzodiazepines, tricyclic antidepressants and anticonvulsants. Topical capsaicin has been used as a desensitizing agent in patients with burning mouth syndrome[17].However, capsaicin may not be palatable or useful in many patients.Catuama, capsaicin 0.02%, chamomile gel, urea 10%, spray containing lycopene enriched virgin olive oil (300ppm), Aloe vera 70% and Hypericum perforatum extract 300 mg. Significant improvement observed in catuama and capsaicin 0.02% oral rinse when compared with placebo. The others reported effectiveness in symptom reduction, but without statistical difference when compared with the placebo/control groups[20].

Systemic capsaicin is therapeutically effective for the short-term treatment of BMS but major gastrointestinal side-effects may threaten its large-scale, long-term use[21]. Petruzzi et al.[21]also observed evident improvement, but in their case capsaicin was administered via the systemic route during four weeks. As adverse effects, these authors recorded problems such as gastric pain, which limited administration of the drug via this route.

Local capsaicin rinse may be beneficial in treating BMS, with reported improvement of symptoms in over 75% of the patients after 8 week of therapy without significant side effects[22].

It should be noted that there are clear limitations to the use of topical capsaicin, such as limited effect over time and a limited magnitude of improvement [23]. While the patients showed improvement from the start to the end of the week of treatment with the active drug formulation, it is also true that the magnitude of such improvement was limited. Topical capsaicin has been used as a treatment alternative for

controlling neuropathic pain in general. The drug is normally used at concentrations of between 0.025% and 0.075%, inducing desensitization to thermal, chemical and mechanical stimuli when applied topically [24].

The mechanism of action involves interaction of capsaicin with the vanilloid receptor (VR1) of the C type sensory nerve fibres [25]. These receptors are non-selective cation channels showing high calcium permeability. In this context, capsaicin inhibits the biosynthesis and axonal transport of substance P, a mediator of nociceptive impulses from peripheral stimulation sites towards the central nervous system. Most capsaicin-sensitive fibres terminate in polymodal nociceptors that respond to a broad range of stimuli (heat, pressure and irritants). Topical capsaicin induces selective and reversible desensitization of the afferent sensory C fibre endings. Taking into account that the amyelinic C fibres in the oral mucosa have been implicated in burning sensation in BMS, in the context of the neuropathic hypothesis of the disease[26,27], topical capsaicin should be considered in the management of BMS, though taking into account its limited effect over time and the discomfort caused during use of the oral rinse in one-third of all patients.

CONCLUSION

Both systemic and topical capsaicin have similar efficacy in relieving symptoms for BMS with gastric side effect in case of systemic capsaicin and bitter taste for topical.

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