



SELF MEDICATION! A BIZARRE CONCEPT: 2 CASES OF ORAL CHEMICAL BURN

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Article Received on 02/12/2018

Article Revised on 24/12/2018

Article Accepted on 15/01/2019

ABSTRACT

Irrational use or self medication of herbal medicinal preparations may be injurious to the oral and oesophageal tissues either applied topically or ingested. The essential oil based medicaments are either available as powders, gels, oils, tablets, etc. They may be prepared either by local people, pharmacies or professionally manufactured & available for use under supervision of an Ayurvedic &/or medical practitioner. These preparations contain beneficial plant extracts, essential oils which might lead to injury to oral mucosa unknown to patient. Cases of such self inflicted chemical burn of the oral mucosa in two different persons are reported observed due to use of same oil preparation available locally, used with varying amount and frequency. History of using over the counter medicaments for dental ailment should be asked when patients visit the dentist with complains of burning or white patch in mouth.

KEYWORDS: Eucalyptus oil, Clove oil, Chemical burn, Mustard oil.

INTRODUCTION

An oral and maxillofacial physician may usually encounter lesions which may show colour varying from that of the normal pink oral mucous membrane. Excluding the patients with habit of tobacco abuse, alcohol abuse or any other deleterious habit; many a times' white lesions with an unspecified aetiology may be encountered keeping in consideration their physiologic counterparts. White, non scrap able lesions include linea alba, leukoedema, frictional keratosis, leukoplakia, oral submucous fibrosis, lichen planus and carcinomas.^[1] White lesions of the oral mucosa obtain their characteristic appearance because of a thickened layer of keratin (hyperkeratosis), superficial debris on oral mucosa, blanching caused by reduced vascularity and loss of pigmentation due to acquired causes.^[2] Injuries to oral soft tissues can occur due to accidental, Iatrogenic and factitious trauma, which may present as burns, ulcerations and gingival recessions. Physical, Chemical and thermal agents are the main causative agents for oral soft tissue burns.^[3] Chemical injuries of the oral soft-tissues may readily occur due to the large number of chemical substances, such as drugs and various agents, which come in contact with the oral cavity.^[4] Two such cases of chemical injury from application of a similar composition of essential oil for toothaches of different origins have been reported here to address the irrational use of readily available over the counter(OTC) highly potent oils.

Contents of the OTC oil: Eucalyptus oil, Camphor oil, Peppermint oil, Mustard oil & clove oil.

Case 1: A 45 yr old male reported to the outpatient Department with a chief complain of toothache related to 46, which was evaluated to be associated with periodontal pocket with gingival recession and bleeding on probing. There was a repeated occurrence of pus and patient gave history of discharge from region of 46 for which he applied essential oil on a cotton swab in the mucobuccal fold alongside the tooth. He experienced burning due to oil application. At time of oral examination, a white hyperkeratotic patch was seen on right muco-buccal fold surrounded by red erythematous area of size approximately 2×3 cm seen in the region of 44 to 47. On palpation, the Lesion was non-tender but scrap able yielding blood on manipulation. Patient was advised for discontinuation of oil application and was referred to Department of periodontology for needful. The patch healed slowly over a period of 3 weeks along with application of Triamcinolone acetonide 0.1% w/w ointment twice daily and Benzydamine hydrochloride 0.15% w/v mouthwash which relieved burning.



Fig 1. a: Case 1; Day 1.



Fig 2. a: Case 2; Day 1.



Fig 1. b: First follow-up(1 week).



Fig 2. b: Completely healed area.(2 weeks).



Fig 1. c: First follow-up(2 weeks).



Fig 3. a: Tobacco pouch keratosis.

Case 2: 38 yr male patient reported for toothache with 46 due to disto-proximal caries and tenderness on vertical percussion. Patient applied the OTC oil in mucobuccal region for relief from toothache. A white hyperkeratosis is visible on right buccal mucosa which was non scrap able and non tender accompanied with brownish surface discoloration. Patient had no symptoms of burning or pain in region of chemical burn so only discontinuation of the irritant factor was advised. Complete healing of mucosa was apparent within a follow up of 2 weeks. Also patient had keratosis at the site of recurrent tobacco quid placement which had yellowish surface discoloration. For this topical application of Tretinoin 0.025 % ointment was advised during the follow up visit.



Fig 3. b: 1 month follow-up

DISCUSSION

Oral mucosal surface lesions may be categorized generally as scrap able or non scrap able, white or red. White lesions are normally seen in the oral cavity and are often found as an incidental finding on routine examination.^[5] In India, the land of Ayurveda and natural medicine, use of medicaments obtained or prepared from plant origin is a great practice especially in rural regions. These extracts from medicinal herbs and plants proven to be therapeutically useful for various ailments have been manufactured by a few local brands as oils or ointments & easily available over the counter. Many herbal remedies have been used for oral health for hundreds years.^[6] Irrational use of herbal medication without an Ayurvedic specialist's consultation can cause systemic and local effects. Oral chemical burn is one such local effect.^[7]

Clinical presentation

The severity and extent of lesions caused by chemical agents depends on the concentration, type and quantity of the substance, as well as on the time of contact with the oral soft-tissues.^[8] In the oral cavity, chemical substances caused diffuse erosive lesions ranging from simple desquamation (slough of mucosa) to complete obliteration of the oral mucosa with extension past the basement membrane into the submucosa.^[9] Desquamation was peculiar feature in first case whereas necrosis was seen in second case. This highlights that duration of use is crucial for signs & symptoms of lesion. There also existed a distinguishable feature between chemical injury to oral mucosa and keratosis caused due to tobacco abuse in a single patient.

The Oils

Eucalyptus oil was a component of the OTC oil used by both the patients here. The major active ingredient of eucalyptus oil is cineole (eucalyptol) that has soothing, stimulant and antidepressant effect.^[10] Symptoms such as diarrhea and vomiting have been reported in cases of ingestion of topical eucalyptus oil.^[11] Chemical burn induced by self medication using eucalyptus oil has been reported by Shirshir *et al.*^[7]

Camphor is famous for its ability to inhibit various types of microorganisms and pathogenic bacteria such as *Escherichia coli*, *Staphylococcus aureus*, *Bacillus subtilis* and many more.^[12] The main chemical components are α -pinene, camphene, β -pinene, sabinene, phellandrene, limonene, 1,8-cineole, γ -terpinene, p -cymene, terpinolene, furfural, camphor, linalool, bornyl acetate, terpinen-4-ol, caryophyllene, borneol, piperitone, geraniol, safrole, cinnamaldehyde, methyl cinnamate and eugenol.^[13] When ingested in small amounts, it creates feelings of warmth and comfort in the stomach, but given in large doses it acts as an irritant.^[14]

Eugenol is the chemical that gives clove its spicy scent and pungent flavor. Upon application, you should feel a slight warming sensation and a pungent, gunpowdery

flavor. While clove oil is considered safe if used appropriately, it can become increasingly toxic if overused. The most common side effect is tissue irritation, which is characterized by pain, swelling, redness, and a burning (rather than warming) sensation.^[15]

Mustard oil (allyl isothiocyanate) is a pungent chemical that imparts the oral irritant sensation of mustard.^[16] Mustard oil applied to the skin elicits a burning pain sensation, followed by development of sensitization, which is characterized by hyperalgesia (increased pain to a normally painful stimulus) and allodynia (pain elicited by a non-painful stimulus).^[17] It is not known if mustard oil induces sensitization in the oral cavity. When applied at the relatively long ISI of 1 min, mustard oil elicited a desensitizing pattern of oral irritation such that intensity ratings of irritancy progressively decreased across trials.^[16] Repeated application of some irritants, such as capsaicin from chili peppers, at 1 min interstimulus intervals elicits a progressive rise in the intensity of oral irritation that is also called sensitization^[18] is applicable for first patient.

Repetitive application of other irritants such as nicotine, menthol or zingerone, induces irritation which declines in intensity across trials, a phenomenon also called desensitization^[19] could be a possibility in the second patient. **Peppermint essential oil** can add to your dental care but does have a few side effects if used in very high quantities. It can give you headaches, heart burn, and allergic reactions.^[20]

Treatment: The management of chemical burns requires removal of the offending agent and symptomatic therapy. Permanent removal of the agent is usually easy to accomplish in iatrogenic or accidental injury cases.⁹ The best treatment of oral chemical burns is prevention. Most superficial burns heal within 2 weeks, while deep burns required debridement followed by antibiotic coverage.³ According to Yano *et al.*, irrigation is the emergency treatment choice to minimize the product effect and current therapy with steroids results in a very favorable prognosis.^[21] Symptomatic treatment may be required in few cases as in first case, as in the second one only withdrawal of irritant may induce healing effect.

CONCLUSION

Every coin has two sides; likewise medicine accompanies a side effect, which is why self medication should strictly be avoided as prevention is better than cure. The miraculous use of essential oils could only be exploited under proper supervision as ingestion may be more injurious than topical application. Patient counselling and enhancing dental awareness may prove beneficial.

REFERENCES

1. Reichart PA. Oral mucosal lesions in a representative cross-sectional study of aging Germans. *Commun Dent Oral Epidemiol*, 2000; 28: 390–98
2. Shetty K. Hydrogen peroxide burn of the oral mucosa. *Ann Pharmacother*, 2006; 40: 351. doi:10.1345/aph.1G426. PMID: 16449535.
3. S. R Panat et al. White Lesions Of Oral Mucosa A Diagnostic Dilemma. Review article. *Journal of Dental Sciences & Oral Rehabilitation*, 2011: 8-10.
4. Ozecelek O, Haytac CM, Akkaya M. Iatrogenic trauma to oral tissues. *J Periodontal*, 2005; 76: 1793-1797.
5. Mohammed Abidullah et al., White, Non-scrapable Oral Mucosal Surface Lesions. *Journal of Clinical and Diagnostic Research*, 2016 Feb; 10(2): 38-41.
6. Little JW. Complementary and alternative medicine: Impact on dentistry. *Oral Surg Oral Pathol Oral Radiol Endod*, 2004; 98: 137-45. doi:10.1016/j.tripleo.2004.05.011. PMID: 15316539.
7. Shishir RS, Renita C, Kumuda AR, Subhas BG. Irrational use of Eucalyptus oil in dentistry: a case report. *Bangladesh Journal of Medical Science*, 2011; 10(2): 122-124.
8. Mamede RC, de Mello Filho FV. Ingestion of caustic substances and its complications. *Sao Paulo Med J.*, 2001; 119: 10-5.
9. A Dilsiz et al. Treatment of Oral Soft-Tissue Burn. *J Clin Exp Dent*. 2010; 2(1): e51-54. doi:10.4317/jced.2.e51.
10. Mamede RC, de Mello Filho FV. Ingestion of caustic substances and its complications. *Sao Paulo Med J*. 2001; 119:10-5. doi:10.1590/S1516-31802001000100004.
11. Yano K, Hata Y, Matsuka K, Ito O, Matsuda H. Effects of washing with a neutralizing agent on alkaline skin injuries in an experimental model. *Burns*, 1994; 20: 36-9. doi:10.1016/0305-4179(94)90103-1.
12. Fahmidabinti Abd Rahman et al. In vitro Antibacterial Activity of Camphor oil against Oral Microbes. *Int. J. Pharm. Sci. Rev. Res.*, 39(1), July – August 2016; Article No. 24, Pages: 119-121.
13. Lincoln DE, BM Lawrence, The volatile constituents of camphorweed, *Heterotheca subaxillaris*, *Phytochemistry*, 1984; 23(4): 933-934.
14. Camphor. National Library of Medicine Database. *Env. Health and Toxicology. Toxnet*. Available at: <https://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+37>
15. Shawn Watson. Treating toothache with clove oil. Reviewed by Claudia Hoffman. *Verywell Health*. 2018. Available at: <https://www.verywellhealth.com/the-use-of-clove-oil-in-dentistry-1059310>.
16. C.T. Simons, M.I. Carstens and E. Carstens. Oral Irritation by Mustard Oil: Self-desensitization and Cross-desensitization with Capsaicin. *Chem. Senses*, 2003; 28: 459-465.
17. Koltzenburg, G. Lundberg, L.E.R., and Torebjörk, H.E. Dynamic and static components of mechanical hyperalgesia in human hairy skin. *Pain*, 1992; 51: 207–219.
18. Green, B.G. Capsaicin sensitization and desensitization on the tongue produced by brief exposures to a low concentration. *Neurosci. Lett.*, 1989; 107: 173-178.
19. Cliff, M.A. and Green, B.G. Sensory irritation and coolness produced by menthol: evidence for selective desensitization of irritation. *Physiol. Behav*, 1994; 56: 1021-1029.
20. Benefits of Peppermint oil and Its Side effects. *Lybrate*. Available at: <https://www.lybrate.com/topic/benefits-of-peppermint-oil-and-its-side-effects#side-effects-allergies-of-peppermint-oil>
21. Yano K, Hata Y, Matsuka K, Ito O, Matsuda H. Effects of washing with a neutralizing agent on alkaline skin injuries in an experimental model. *Burns*, 1994; 20: 36-9.