

TOOTH PASTE INDUCED ORAL BURNS

¹ Krishna Mohan Reddy K
² Mallika Reddy P

¹ Reader
² Reader

¹ Department of periodontics, GPR Dental College and Hospital, Kurnool, Andhra Pradesh

³ Department of Oral surgery, KGF Dental College and Hospital, Kolar, Karnataka

ABSTRACT: Desensitizing tooth pastes have been used for treatment of hypersensitivity for decades. Although it has many benefits, it can cause some adverse effects. A 60 years old man experienced oral ulceration as a consequence of application of potassium nitrate paste overnight at lower buccal and lingual area of anterior teeth. Diagnosis was made on the basis of definitive history. Oral lesions healed well within ten days following the use of local and systemic antibiotics.

KEYWORDS: Chemical burn, toothpaste, self-inflicted injuries.

INTRODUCTION

The desensitizing potassium nitrate toothpaste has been used since 1980s for the treatment of hypersensitivity. Potassium ions diffuse along the dentinal tubules to block the dentinal tubules and inactivate intra dentinal tubule nerves.¹ This article reports a rare case of chemical burn on labial mucosa and tongue resulting from overnight local application of potassium nitrate toothpaste for the treatment of localized lower anterior teeth hypersensitivity.

Case Report

A 60 year-old man attended to our dental clinic with sudden onset of pain, swollen lower lip and tongue following overnight intra oral topical application of desensitizing paste. He had severe attrition in relation to 31, 32, 33, and 41, 42, 43 which was hypersensitivity to hot and cool items and even to oral breaths. Local examinations revealed the tender solitary whitish ulcer on gingiva, vestibule of lower lip and diffuse ulcerations on tongue (**Fig.1**).

Topical benzocaine 20% gel, Metronidazole and Chlorhexidine gluconate gel were applied after local wound irrigation with normal saline. He also received oral Diclofenac and prophylactic Doxycycline course. He was counseled about drug reaction of tooth paste.

Discussion

Human exposure to toxic agents can be classified as unintentional (accidental), intentional (self inflicted) and

others.² Oral mucosal damage can occur due to chemicals or with wide range of dental agents by unintentional therapeutic errors of patient or dental procedures.^{3, 4, 5, 6} Unintentional therapeutic error and improper application of medications are two common causes of oral burns. History, clinical presentations are sufficient to diagnose oral burns and rarely require biopsy. Aspirin and its derivatives are available as gels⁷, mouthwash⁸, powder and tablets⁹ for tooth ache. All these agents are acidic in nature (low PH 3.5-5.0) and result in coagulative necrosis of mucosa. These mucosal burns are also called as "Aspirin burns." Bagga et al¹⁰ reported a case of chemical burn caused by overnight application of crushed garlic applied on gingival and buccal vestibule. Tooth paste burns commonly involve gingivae. Tooth paste burns are due to either of active ingredients or preservatives of paste.

Potassium nitrate (KNO₃) is a natural water soluble mineral which is available in crystal or powder form. Potassium nitrate is also known as saltpeter and niter. Potassium nitrate is used in preparation of gun powder and toothpaste and often strengthens the enamel of teeth. Common adverse reactions of potassium nitrate are itching, skin rash¹¹ and methemoglobinemia.¹² Food and Drug Administration has approved Potassium nitrate as desensitizing tooth paste with maximum concentration up to 5%.¹³ Potassium nitrate acts at two levels one at cellular (clogging tubules) and another at sensory nerve level (impairing neuronal transmission).¹⁴



Fig.1 Tooth paste induced intra oral burns of lip and tongue

Mean daily oral intake of Potassium nitrate and sodium nitrate was 215 mg and 7.7 mg respectively.¹⁶ Vegetable such as beets, celery, lettuce, and spinach are rich in nitrates and forms 85% of dietary intake¹⁵ which has not produced any mucosal injuries. Cumulative dose of potassium nitrate as desensitizing agent is very meager when compared to dietary intake of nitrates¹⁵. Concentration of chemical, duration of exposure, anatomic area of application, preexisting skin conditions, and individual sensitivity determines development of chemical burns.^{17, 18}

CONCLUSION

This article illustrates an unusual complication of potassium nitrate. The medicated toothpaste is being used for decades in many regions of world. Clinician should be cautious in prescribing these drugs in allergic individual and judicious in selecting drugs.

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Corresponding Author

K. Krishna Mohan Reddy.

KEMO superspeciality
Dental Hospital, Budhawara peta,
Opposite Government medical college.
Kurnool. A.P.

Phone No:9440585184
Email: drkemoknl@gmail.com,
malikapreddy@gmail.com