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PAIN RELIEF OF APHTHOUS ULCERS - EFFECTIVENESS OF TWO TOPICAL ANESTHETIC AGENTS

Dental Science

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ABSTRACT

Aphthous ulcers are the most common type of inflammatory efflorescence of oral mucosa. Topical anesthesia is widely advocated in dental practice to reduce pain caused by different oral conditions. Hence, the clinical effectiveness of topical anesthetic agents viz. Precaine® (8% Lidocaine + 0.8% Dibucaine) was compared with Precaine® B (20% Benzocaine) in the pain relief of aphthous ulcers. Both the products were used alternately in two different visits and the individual's pain response was assessed in a total of 40 patients using VAS pain scale. Statistical comparision between the two products showed higher mean score for Precaine® B when compared to Precaine®. A visit wise comparision was also made using student's t-test and Precaine® B reported significant lower scores (P<0.05) in visit 2. Thus, its concluded that combination agents - 8% Lidocaine + 0.8% Dibucaine can be used as effectively as 20% Benzocaine for the symptomatic treatment of aphthous ulcers.

KEYWORDS

Topical anesthesia, Dibucaine, Benzocaine, aphthous ulcers.

INTRODUCTION

Aphthous ulcers are among the oral mucosal conditions that dentists and physicians see most commonly in their patients. It affects at least 20% of the population, and its natural course is one of eventual remission (Woo and Sonis 1996). Oral aphthous ulcers typically present as painful, sharply circumscribed fibrin-covered mucosal defects with a hyperaemic border (Altenberg at al 2014). There are 3 main clinical types – minor aphthous ulcers (80% of all aphthae) that are less than 5mm in diameter and heal in 7 to 14 days, major aphthous ulcers are large ulcers that heal slowly over weeks or months with scarring, herpetiform ulcers are multiple pinpoint ulcers that heal within about a month. Diagnosis of aphthae is based on the patient's history and clinical features because specific tests are unavailable (Scully and shots 2001). In dentistry, topical anesthesia is commonly used to reduce the discomfort of intraoral local anesthetic injections. Additionally, topical agents also provide anesthesia for intraoral operative procedures, symptomatic relief from the pain of superficial mucosal lesions, toothache and post-extraction pain (Meechan JG 2008). These anesthetics are produced in different formulations, with a variety of agents used to produce the anesthetic effect (McDonald et al 2011).

The factors that influence the efficacy of topical anesthetics include the agent and its concentration, duration of application and site of application (Meechan JG 2002). Newer topical anesthetic combinations are in use intraorally which claims improved efficacy. These are marketed under different trade names, among which is Precaine® that contains lidocaine as well as dibucaine. Dibucaine is used topically in medical field to treat pain and itching caused by minor burns, insect bites, hemorrhoids, sunburn, or other minor skin irritations. Clinical reports about the use of topical application of dibucaine in dentistry are scarce (Yamamura K 1999). There is scope for further clinical research to compare combination of topical anesthetic agents that can achieve faster onset of action and prolonged anesthesia. Thus, the main aim of conducting the present clinical study is to compare the effectiveness of Precaine® B (20% benzocaine) with Precaine® (8% lidocaine + 0.8% dibucaine) in symptomatic relief of recurrent aphthous ulcers in two different visits.

METHODOLOGY

A total of 40 patients attending out-patient Department of Dentistry with a complaint of aphthous ulcers were included in the study.

Inclusion criteria - Patients with aphthous ulcers, ability to understand and complete visual analogue scale (VAS) were only included in the study.

Exclusion criteria - Patients with any confounding medical history and presence of other active sites of pathology intraorally were excluded from the study.

Informed consent was obtained from the patients who were included in the study. They were tested for two different topical anesthetic agents Product I (Precaine® - 8% Lidocaine + 0.8% Dibucaine) and Product II (Precaine® B - 20% Benzocaine). In the first visit, half of the patients received Product I and the other half Product II. In the subsequent visit, patients who received Product I in the first visit received product II and vice versa.

The procedural details were explained to all the patients according to the level of understanding and each patient was apprised of Visual Analogue Scale (VAS). The procedure was performed by a single operator in the entire study. Topical anesthetic agent of 0.5ml was applied over the ulceration for 10 seconds using a cotton applicator tip. The assessments of pain response were carried out after the application. The patient was instructed to mark his/her response to pain over the VAS as explained pre-operatively. Thus, obtained data from both the visits was subjected to statistical analysis.

RESULTS

The scores obtained from VAS pain scale of 40 patients were stored in an excel spread sheet (Microsoft, Inc., Redmond, Wash) and statistical analysis was carried out using statistical package for social sciences (SPSS, Inc., Chicago, I11). A visit wise comparison was made between both the products using paired student's t-test.

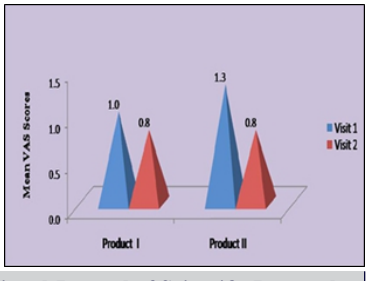
Comparison of VAS pain scale scores between two test products: Higher mean score have been obtained for Precaine® B (Product II) when compared to Precaine® (Product I), but was statistically insignificant (P>0.05)[TABLE 1].

Comparison of VAS pain scale score of the two test products in two visits: Precaine® B has reported significantly higher scores in visit 2 with VAS (P<0.05)[FIGURE1].

TABLE 1: Comparison of VAS scores between two test products

	Product I	Product II
No. Of Children	20	20
Range	0-3	0-2.8
Mean+/-SD	0.86+/-0.7	1.0+/-0.9
Median	0.9	0.9
P Value	P=0.56, NS	

FIGURE 1: Visit-wise comparison of pain scale scores between the two test products



DISCUSSION

The local anesthetics in routine clinical use today may be divided into two broad groups – agents containing an ester linkage like benzocaine and agents containing an amide linkage like lidocaine and dibucaine (Stewart RE 1982). Lidocaine has faster onset and besides having excellent anesthetic efficacy, it has limited allergenicity (Hawkins and Moore 2002). Dibucaine is commonly used as a topical anesthetic agent in the field of dermatology. It has an advantage of longer duration of anesthesia inspite of delayed onset of action.

Yamamura et al have reported pain relief of oral ulcers that lasted for 2–5 hours after application of the dibucaine film. Adriani et al studied a number of different topical anesthetics by electrical stimulation of the mucous membrane and reported that drugs like dibucaine were the longest acting. On the contrary, benzocaine is absorbed slowly due to its low aqueous solubility and it has also reported few localized allergic reactions (Meechan JG 2008). Hence, this study has been planned to compare the effectiveness of a combination of 8% lidocaine and 0.8% dibucaine against 20% benzocaine.

The topical anesthetics in our study were applied with mildly for 10 seconds and left for 30seconds to increase the depth of penetration which is based on the principle that the duration of application of the anesthetic influences the amount of penetration (Ram and Peretz 2001).

Measurement of pain is complicated as it is experienced on an individual level and is dependent on several physiological and psychological factors. Bayer CLV discussed on the individual's self reports of pain intensity and stated that VAS has been extensively measured and show good sensitivity and validity for most of the people. Hence in the present study, VAS has been used to assess the subjective pain as it was known to be a reliable pain scale.

Giddon et al. compared topical anesthetics in different application and dosage forms and reported that there was no difference among 20% benzocaine, 5% lidocaine and placebo when applied for 30 seconds on palate using 25 gauge needle. In our study though there was no statistical significance between the topical anesthetic agents, but the mean pain scores observed for Precaine® were lower compared to Precaine® B. This difference could be attributed to the presence of dibucaine which has better penetration and duration of anesthesia.

CONCLUSION

Lidocaine and dibucaine combination can be used in the symptomatic treatment of aphthous ulcers as effectively as the commonly used 20% benzocaine with a short period of application there by minimizing the possible adverse effects.

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