COMPARISON OF SILVER NITRATE CHEMICAL CAUTERIZATION WITH TOPICAL APPLICATION OF AMLEXANOX AND TOPICAL STEROIDS IN THE MANAGEMENT OF APHTHOUS STOMATITIS

Muthubabu K¹, Srinivasan M. K², Jeeva G¹, Metali Rail¹, Chaitanya Babjee K⁵, Vikram Raj Mohanam T. C⁶

¹Assistant Professor, Department of ENT, Meenakshi Medical College and Research Institute, Kanchipuram.
²Professor, Department of ENT, Meenakshi Medical College and Research Institute, Kanchipuram.
³Junior Resident, Department of ENT, Meenakshi Medical College and Research Institute, Kanchipuram.
⁴Junior Resident, Department of ENT, Meenakshi Medical College and Research Institute, Kanchipuram.
⁵Assistant Professor, Department of ENT, Meenakshi Medical College and Research Institute, Kanchipuram.
⁶Junior Resident, Department of ENT, Meenakshi Medical College and Research Institute, Kanchipuram.

ABSTRACT

AIM

Aphthous stomatitis is a common ENT problem encountered in a day to day practice. The treatment of this condition is quite sketchy. Our aim is to reduce the pain and duration of the ulcer effectively.

SETTINGS

A case series study of 60 patients who were chosen and evaluated.

METHODS AND MATERIALS

- 20 patients were subjected to local application of amlexanox paste.
- 20 patients were subjected to local steroid application.
- 20 patients underwent cauterization of the ulcer with silver nitrate.

STATISTICAL ANALYSIS

Response to 3 modes of treatment were analyzed and results expressed in percentage.

RESULTS AND CONCLUSION

90% of the patients who underwent silver nitrate chemical cauterization of the ulcer showed significant reduction in symptoms and duration of the ulcer, while patients who underwent topical application of steroids and amlexanox did not show significant reduction in the symptom and duration of the ulcer.

KEYWORDS

Silver nitrate/Aphthous stomatitis/Chemical cauterization.


INTRODUCTION:

Aphthous stomatitis is a common disease of the oral cavity. Individual ulcer lasts up to 10 to 14 days.¹

Ulcers are painful and worsen by physical contact. Ulcers are characterised by welling and redness of the tissues of oral cavity. The main symptoms are burning and stinging sensation with difficulty in chewing and speaking. This study is aimed to compare the various modalities of treatment like topical steroids,² amlexanox³ and silver nitrate chemical cauterisation⁴ of the ulcer. The efficacy of each mode is compared based on the patient response to treatment symptomatically.

METHODS: In this prospective study, 60 patients from outpatient and inpatient department of Meenakshi medical college hospital and research institute were chosen for this study. Patients of both sexes and age group between 5 years and 60years were selected for this study. Malignancies in the oral cavity, infective lesions, lichen planus, herpetic lesion were excluded. Only patients with aphthous ulcer based on clinical symptoms and signs were taken up for this study. In this study, 20 patients were subjected to the topical application of amlexanox, 20 patients were subjected to the local application of topical steroids, 20 patients underwent chemical cauterization of the ulcer with silver nitrate. Chemical cauterization was done using silver nitrate sticks (Fig. 2). No anaesthesia was required during the procedure, however for children below 10 years 4% lignocaine topical spray was used. First the aphthous ulcer was well exposed (Fig. 1). The tip of the 25% silver nitrate stick was directly applied over the ulcer (Fig. 3), silver nitrate dissolves and form a grey color membrane over the ulcer (Fig. 4). Only
one silver nitrate stick each was used. This application was done only once. In patients undergoing treatment with 5% amlexanox cream (3) was used 4 times a day daily till the disappearance of the ulcer. In patients undergoing treatment with 0.1% topical steroids (4) was used 4 times a day daily till the disappearance of the ulcer. The response of all the three groups were compared based on the symptomatology and duration of healing of the ulcer. Symptoms that were evaluated were burning sensation, stinging sensation, difficulty in chewing, difficulty in speaking.

STATISTICS:

Table 1: histogram showing the duration of healing following treatment with amlexanox, topical steroids and silver nitrate

Table 2: Histogram showing the patients response based on improvement of symptoms

RESULTS: The duration of healing of normal aphthous ulcer is 10 to 14 days.(1) In our study, in patients who underwent chemical cauterization the duration of healing was 7 days. In patients who underwent treatment with amlexanox and topical steroids the duration of healing was 10 to 12 days (tab.1). Evaluation based on the symptoms, 18 out of 20
patients with silver nitrate cauterisation had dramatic relief of symptoms as already mentioned. 10 out of 20 patients with amlexanox had symptomatic relief and 9 out of 20 patients with topical steroids had symptomatic relief. (tab.2).

**DISCUSSIONS:** Aphthous Stomatitis – the name is derived from the Greek word, aptha-ulcer. (1) Aphthous Stomatitis is a painful and recurrent disease of oral mucosa. It occurs as shallow, rounded ulcers with an inflammatory rim or halo, often with pseudo membrane which can fade from yellow/green to grey. (5) Affects non keratinized mucosal surface. (5) Ulcers may vary in size between 8 to 10 mm. (1) Masticator space like dorum of tongue or gingiva may occasionally be involved. (6) Recurrence of aphthous ulcer and multiplicity is a common finding. The exact etiology is not known, but involves a T cell mediated immune response. (7) The lesion begins in childhood and recurrent aphthous stomatitis are more common in women, under 40 years, nonsmokers, (8) high socioeconomic status, vitamin deficiency (iron, B12, folate), oral trauma, anxiety or stress, Food sensitivities, hormonal changes, badly fitting dentures. Infectious bacteria like streptococci, gonococci and fungus, viruses. Poisoning with heavy metals like lead and mercury. Usually the individual ulcer last for 10 to 14 days. (1) The pain is worsened by physical contact. Patients present with swelling and redness of the tissues of the mouth. Prodromal sensation like burning, itching or stinging sensation may be present. Difficulty in chewing and speaking are frequently complained. In severe cases malnutrition and weight loss. Symptoms ranges from a minor nuisance to interfering with eating and drinking. There are various modalities of treatment available like Topical corticosteroids like 0.1% triamcinolone (orabase paste), (2) topical analgesics/anaesthetics/anti- inflammatory agents like benzoylamine hydrochloride mouth wash, amlexanox paste, viscous lidocaine. Topical antiseptics like doxycycline, tetracycline, (9) chlorhexidine. Oral prednisolone, vitamin B 12, levamisole, dapsone, azathioprine, thalidomide, (10) colchicine. Chemical cauterisation with silver nitrate (4) are few other methods. Alternative treatment like amole vera. (11) Myrtus communis, Rosa damascena, zinc sulfate, nicotine, polio virus vaccine, prostaglandin E2 have also been tried.

**MODE OF ACTION:**

**Amlexanox:** Mechanism of action is not known, it is a topical agent with anti-inflammatory and anti-allergic properties. (3) 5% is applied 2 to 4 times a day.

**Steroids:** Decrease the inflammation by suppressing the migration of polymorphonuclear leucocytes and reversing the capillary permeability. (9) 0.1%, 0.5%, 0.025% cream/ointment.

**Silver Nitrate:** It has bactericidal action at lower concentration and it induces synthesis of nano particles. At higher concentration induces cell death.

\[
\text{Ag} + \text{Cl} \rightarrow \text{AgCl} - \text{precipitate bacterial protein,}
\]

coagulates cellular protein. Silver ion or salt or colloidal silver preparation can inhibit growth of both Gram positive and Gram negative bacteria. It is also found in combination with potassium nitrate (75% AgNO₃ and 25% KNO₃).

\[
\text{AgNO}_3 + \text{H}_2\text{O} \rightarrow \text{AgOH} + \text{HNO}_3
\]

Both silver oxide and nitric acid produces the characteristic brownish-white discolouration. Silver nitrate salts contact time on the mucosal surface varying at times. Mean depth of penetration of silver nitrate was 0.38mm at a contact time of 20 seconds. (12)

**CONCLUSION:** Aphthous stomatitis is a common problem which is encountered in day to day practice. Since there are various modalities of treatment, chemical cauterization with silver nitrate was found to be effective. Silver salts has been shown to exert an inhibitory effect on proliferation and differentiation of several cells like lymphocytes, (12) leucocytes, (13) keratinocytes (14) and dermal fibroblasts. So treatment of aphthous stomatitis using silver nitrate cauter was found to be simple, cost effective and can be considered as a best treatment modality when compared to other methods like topical amlexanox and topical steroids. Since this procedure is very simple and can be done as outpatient procedure, patient compliance is also very good with infrequent recurrence.

**REFERENCES:**