USING TOPICAL APPLICATION OF ((PREDNISOLONE (TABLET) MIXED WITH GLYCERIN SOLUTION)) FOR APHTHUS ULCERATION IN MEDICALLY COMPROMISED PATIENTS (AS A CASE SERIES)

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ABSTRACT:

Background: The history of traumatic events as oral ulceration that occurred to biting during talking, secondary to mastication, mechanical trauma, electrical, chemical, or thermal conditions, or recurrent conditions.

Aims of the Study: Assessment efficiency of topical application of corticosteroid in oral mucosal ulcerations as modification for systemic using in medically compromised patients.

Subjects, Materials and Methods: Ten patients participated in this study as case series with age range (50-70) years old (both males and females randomly array) and with different systemic diseases (hypertensive, diabetes mellitus, cardiovascular pathology and thyroid conditions).

Results and Conclusions: The therapeutic benefit of corticosteroids lies in their anti-inflammatory and immune modulation properties which make them highly effective in the management of oral mucosal lesions. The topical applications of steroids in the healing of oral mucosal ulcerations (mild and moderate cases) may have advantages as alternative modalities of treatment more than systematic administration especially when this systemic uses are contraindicated due to its adverse effects.

Keywords: Oral Ulcerations, Corticosteroids, Oral mucosal lesions.

I. INTRODUCTION:

Ulcerations are characterized by defects in the epithelium, underlying connective tissue, or both. Due to diversity of causative factors and presenting features, diagnosis of oral ulcerative lesions might be quite challenging (Greenberg et al., 2008; Bruce et al., 2015). The ulcerative lesion lasts for two weeks or longer, it is considered chronic; otherwise, it is regarded as an acute ulcer (Muñoz-Corcuera et al., 2009). Recurrent ulcers, on the other hand, present with a history of similar episodes with intermittent healing. The term solitary indicates the presence of a single ulcerative lesion whereas the term multiple describes the presence of several ulcerative lesions (Wood and Goaz, 1997). The diagnosis comes mostly from the history and examination, but the following special investigations may be involved: blood tests (vitamin deficiency, anemia, leukemia, Epstein-Barr virus, HIV infection, diabetes) microbiological swabs (infection), or urinalysis (diabetes). A biopsy (minor procedure to cut out a small sample of the ulcer to look at under a microscope) with or without immunofluorescence may be required, to rule out cancer, but also if a systemic disease is suspected (Tyldesley and Anne Field, 2003). Ulcers caused by local trauma are painful to touch and sore. They usually have an irregular border with erythematous margins and the base is yellow. As healing progresses, a keratotic (thickened, white mucosa) halo may occur (Kharazmiet al., 2012). The ulcers are usually less than 1 cm in diameter and, in most instances; their size is
approximately 4–5 mm in diameter. However, the classification of ‘minor’ RAS does not depend on the dimensions of the lesions alone, but on a number of clinical features (Rich et al., 2001). The major ulcers tend to be larger than those of oral ulceration, and they are of greater duration, up to a period of months in some cases (Tian and Zhang, 2010). In herpetiform ulceration the ulcers are small (1–2 mm) and multiple (as many as a hundred ulcers may be present at the same time). Although any non-keratinized oral mucosa may be involved, characteristically the affected sites are the lateral margins of the tongue and the floor of the mouth (Rezk et al., 2018).

Topical and systemic steroids find use in the management of various mucosal diseases such as lichen planus, pemphigus, and oral submucous fibrosis. Local pharmacological agent for oral ulceration as shown in Table (1)

Table (1): Local pharmacological treatments of oral ulceration (Thongprasom and Dhanuthai, 2008).

<table>
<thead>
<tr>
<th>LOCAL PHARMACOLOGICAL TREATMENTS</th>
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<tbody>
<tr>
<td>1. Antisepsics, anti-inflammatory and analgesics (chlorhexidine mouthwash or gel 3 0.2% v/ d; triclosan gel 3 v/ d; topical diclofenac 3% ointment amlexanox 5% 2-4 v/ d).</td>
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<tr>
<td>2. Antibiotics (doxycycline gel at low doses).</td>
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<tr>
<td>3. Topical corticosteroids (triamcinolone acetonide 0.05-0.5% 3-10 v/ d, fluocinolone acetonide 0.025 to 0.05% 5.10 v/ d; Clobetasol Propionate 0.025%).</td>
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<tr>
<td>4. Hyaluronic acid (0.2% gel 2 v/ d two weeks).</td>
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<tr>
<td>5. Topical anesthetics (topical lidocaine 2% spray or gel).</td>
</tr>
<tr>
<td>6. Other: Laser, natural substances ... (Nd: YAG, myrtle, quercetin, rosa damascena).</td>
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The adrenal cortex secretes glucocorticoids, mineralocorticoids (collectively referred to as corticosteroids), and sex hormones. The first two are synthesized from cholesterol (Al-Hashimiet al., 2007).

Corticosteroids are classified as hydrocortisone, prednisone, triamcinolone, dexamethasone, clobetasol, and mometasone (Rogers, 1997).

**Subjects, Materials and Methods**

Ten patients participated in this study as case series with age range (50-70) years old (both males and females) and with different systemic diseases (hypertensive, diabetes mellitus, cardiovascular pathology; all these subjects (samples) suffered from systemic diseases that mean systemic administration of steroidal drugs were contraindicated or limited: this study was done in samples attended college of dentistry/ Babylon University/ Oral Medicine clinic; under supervision of oral medicine specialists. These samples collected during the period between December 2018 to March 2019.

Five to ten milligrams of prednisolone tablet mixed with five milliliters of glycerin solution, this component used as topical application on oral ulcer in these samples applied of these lesions for 3-5 days; as shown in Figures (1) (2).
Figure (1): Prednisolone tablet (5 mg)

Figure (2): Daily topical application (5 times /day) of 10 mg of prednisolone –tablets mixed with in 5 ml of Glycerin solution

II. RESULTS:
Before starting treatment

Figure (3): Age: 51 years old
Medical history: Type II diabetes
Chief complaint: ulcer interferes with eating and speaking
Diagnosis: Recurrent oral ulceration

Started treatment one day after the eruption of the ulcer. Complete healing took place 4 days after starting the treatment

2 Days follow up 
6 Days follow up

Figure (4) / 2 and 6 days follow up.

Before starting treatment

Figure (5): Age: 66 years old
Medical history: Type II diabetes
Chief complaint: ulcer interferes with eating, speaking and sleeping
Diagnosis: Recurrent Oral Ulceration

Before starting treatment

Started treatment two days after the eruption of the ulcer…. Complete healing took place 3 days after starting the treatment
5 Days follow up

Figure (6): 5 days follow up.

Before treatment

**Figure (7): Age**: 50 years old

**Medical History**: Type II diabetes, Hypertension, open heart surgery

**Chief complaint**: ulcer interferes with eating, speaking

**Diagnosis**: Recurrent Oral Ulceration

Started treatment three days after the eruption of the ulcer…. Complete healing took place 3 days after starting the treatment
III. DISCUSSION

Treatment of RAS remains a great challenge. Different kinds of treatment have been attempted over the years. Management of aphthous stomatitis depends on the severity of the lesions. Minor lesions can usually be treated topically with a product that combines a mucosal binding agent and a topical steroid (Ship et al., 2000).

Topical corticosteroids have been commonly used over the last 50 years to treat various inflammatory mucosal conditions (Lohiet al., 2007).

Although, the topical corticosteroids suppress the local flora and can cause an overgrowth of Candida albicans species, which can complicate therapy. Candidiasis can be managed by reducing or stopping the corticosteroid treatment (if appropriate) and applying a topical antifungal, such as miconazole gel, to help control the infection but, topical corticosteroids are considered the main treatment for aphthous ulceration. They help reduce the inflammatory response, which in turn helps to reduce pain (Gibson and Ferguson, 2004). Therefore this item (corticosteroid), using in low dose and short period of time to avoid the side effects.

Eisen and Lynch, 2001 revealed that the topical anesthetics play an important adjunctive role for pain control. In general, a direct application of topical therapy combination of topical steroids mixed with oral mucosal adhesive lotion are adequate for mild cases with lesions, whereas patients with more severe aphthous stomatitis or those with relatively inaccessible lesions generally require treatment with a corticosteroid-containing oral elixir, these results agreed with the current study; in topical corticosteroids mixed with anti-ulcers oral adhesive agents like glycerin.

Severe ulcers and those not responding to topical therapy may require more aggressive management consisting of systemic corticosteroids, intra-lesional corticosteroids, or systemic immune-modulators.

The main action of steroidal agents in oral mucosal lesions (oral ulcers) are both anti-inflammatory and immunomodulation actions.

The Oral application of the developed bilayer muco-adhesive solution loaded with only 1mg of prednisolone provided muco-adhesive and convenient application and was able to promote RAU healing with shorter treatment duration (Barrons, 2001), these explanations matched with the present study.

Lynde et al., 2009 found that prednisolone resulted in faster healing of ulcers, also who reported that Prednisolone (5-10 mg/d) is an effective treatment for patients with RAS with high levels of recurrences.

IV. CONCLUSIONS:

Steroids provide quick, effective results in many diseases. However, it is imperative that the clinician keeps in mind, the indications, contraindications and special precautions that must be exercised while dabbling with
steroids and must be aware of the dose modifications and alterations that must be customized to each patient according to the disease process and the patient condition and response.

The therapeutic benefit of corticosteroids lies in their anti-inflammatory and immunomodulation properties which make them highly effective in the management of oral mucosal lesions.

Using of topical application of steroidal drugs or combined with oral lotion in mild and moderate cases of oral ulcers as scientific approach to avoid the adverse effects of corticosteroids in different systemic condition

REFERENCES