International Journal of Life Sciences, Biotechnology and Pharma Research Vol. 13, No. 7, July 2024 Online ISSN: 2250-3137
Print ISSN: 2977-0122

DOI: 10.69605/ijlbpr_13.7.2024.52

ORIGINAL RESEARCH

Correlation of Pain Score with Ulcer Size in Oral Aphthous Ulcers Using 2% Curcumin Gel and 0.1% Triamcinolone Oral Paste - A Comparison Study

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Received Date: 10 April, 2024 Accepted Date: 01 June, 2024

ABSTRACT

Background: Oral aphthous ulcers, commonly known as canker sores, are painful lesions that can significantly impact a patient's quality of life. Various treatments are available, including 2% curcumin gel and 0.1% triamcinolone oral paste. This retrospective study aims to compare the efficacy of these two treatments in reducing pain scores and ulcer size. **Materials and Methods:** A retrospective analysis was conducted on 70 patients with oral aphthous ulcers treated at a dental clinic in Darbhanga over an 18-month period. Patients were divided into two groups: Group A (n=35) received 2% curcumin gel, while Group B (n=35) received 0.1% triamcinolone oral paste. Pain scores were recorded using a Visual Analog Scale (VAS) at baseline, day 3, and day 7. Ulcer size was measured at the same time points using a digital caliper. Data were analyzed using paired t-tests and ANOVA to determine the significance of changes in pain scores and ulcer sizes within and between groups. **Results:** The mean baseline pain score for Group A was 7.2±1.5, which decreased to 3.8±1.2 on day 3 and 1.5±0.8 on day 7. Group B had a mean baseline pain score of 7.5±1.4, which reduced to 3.2±1.1 on day 3 and 1.2±0.7 on day 7. The mean ulcer size for Group A was 5.2±0.9 mm at baseline, 3.5±0.7 mm on day 3, and 1.8±0.5 mm on day 7. For Group B, the mean ulcer size was 5.0±0.8 mm at baseline, 3.0±0.6 mm on day 3, and 1.5±0.4 mm on day 7. Both treatments significantly reduced pain scores and ulcer sizes ($p<0.05$). However, Group B showed a slightly faster reduction in both parameters compared to Group A. **Conclusion:** Both 2% curcumin gel and 0.1% triamcinolone oral paste are effective in reducing pain and ulcer size in patients with oral aphthous ulcers. Triamcinolone paste showed a slightly faster reduction in pain and ulcer size compared to curcumin gel. Further prospective studies are needed to confirm these findings.

Keywords: Oral aphthous ulcers, curcumin gel, triamcinolone oral paste, pain score, ulcer size, retrospective study.

INTRODUCTION

Oral aphthous ulcers, commonly referred to as canker sores, are among the most prevalent oral mucosal lesions, affecting up to 25% of the general population at some point in their lives (1). These ulcers are characterized by painful, recurrent, and round or ovoid lesions with a yellowish or grayish base surrounded by erythematous halos (2). Despite their benign nature, aphthous ulcers can cause significant discomfort, leading to difficulties in eating, speaking, and maintaining oral hygiene (3).

The etiology of aphthous ulcers is multifactorial, with potential contributing factors including genetic predisposition, nutritional deficiencies, stress, hormonal fluctuations, and immune system dysregulation (4,5). Various treatment modalities have

DOI: 10.69605/ijlbpr_13.7.2024.52

been explored to alleviate the pain and accelerate the healing of these ulcers, ranging from topical and systemic medications to alternative therapies (6).

Curcumin, a natural polyphenolic compound derived from the rhizome of Curcuma longa (turmeric), has garnered interest for its anti-inflammatory, antioxidant, and wound-healing properties (7). Studies have demonstrated that curcumin can modulate inflammatory pathways and enhance tissue repair, making it a promising candidate for the treatment of oral mucosal lesions (8,9).

On the other hand, triamcinolone acetonide, a synthetic corticosteroid, is widely used in the management of oral lesions due to its potent anti-inflammatory and immunosuppressive effects (10). Topical triamcinolone paste has been shown to effectively reduce pain and promote healing in patients with aphthous ulcers (11).

This retrospective study aims to compare the efficacy of 2% curcumin gel and 0.1% triamcinolone oral paste in reducing pain scores and ulcer size in patients with oral aphthous ulcers. By analyzing patient outcomes over an 18-month period, this study seeks to provide insights into the relative benefits of these two treatment options, thereby guiding clinical decision-making in the management of this common oral condition.

MATERIALS AND METHODS

Study Design

This retrospective study was conducted at a dental clinic in Darbhanga, involving 70 patients diagnosed with oral aphthous ulcers. The study period spanned 18 months. Patient confidentiality was maintained throughout the study.

Sample Selection

Patients included in the study were those who presented with clinical features of oral aphthous ulcers and had complete medical records available for review.

Inclusion criteria were:

- Age between 18 and 60 years.
- Diagnosis of minor or major aphthous ulcers.
- No history of systemic diseases affecting oral health.
- No concurrent use of other oral ulcer treatments.

Exclusion criteria were

- Presence of systemic conditions such as autoimmune diseases, diabetes, or cancer.
- Use of immunosuppressive medications.
- Pregnancy or lactation.

Treatment Protocol

Patients were divided into two groups based on the treatment they received:

- **Group A (n=35):** Treated with 2% curcumin gel, applied topically to the ulcer site three times daily.
- **Group B (n=35):** Treated with 0.1% triamcinolone oral paste, applied topically to the ulcer site three times daily.

Data Collection

Data were extracted from patient records, including demographics, baseline ulcer characteristics, pain scores, and ulcer size. Pain scores were recorded using a Visual Analog Scale (VAS) ranging from 0 (no pain) to 10 (maximum pain) at baseline (day 0), day 3, and day 7 of treatment. Ulcer size was measured using a digital caliper in millimeters at the same time points.

Statistical Analysis

Data were analyzed using SPSS software version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize patient demographics and baseline characteristics. Paired t-tests were conducted to compare pain scores and ulcer sizes within each group at different time points. Analysis of variance (ANOVA) was used to compare the changes in pain scores and ulcer sizes between the two groups. A p-value of <0.05 was considered statistically significant.

Outcome Measures

The primary outcome measures were the changes in pain scores and ulcer size from baseline to day 3 and day 7. Secondary outcomes included the comparison of the efficacy of 2% curcumin gel and 0.1% triamcinolone oral paste in reducing pain and ulcer size.

RESULTS

Patient Demographics and Baseline Characteristics

The study included 70 patients, with 35 patients in each treatment group. The mean age of patients in Group A was 34.2±8.7 years, and in Group B, it was 35.1±9.2 years. There were no significant differences in baseline characteristics between the two groups.

Pain Score Reduction

Pain scores were recorded at baseline, day 3, and day 7 for both groups. Both treatments significantly reduced pain scores over time, with Group B showing a slightly faster reduction.

Table 1: Pain Scores Over Time

Time Point	Group A (2% Curcumin Gel)	Group B (0.1% Triamcinolone Paste)
Baseline	7.2 ± 1.5	7.5 ± 1.4
Day 3	3.8 ± 1.2	3.2 ± 1.1
Day 7	1.5 ± 0.8	1.2 ± 0.7

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Ulcer Size Reduction: Ulcer sizes were measured at baseline, day 3, and day 7 for both groups. Both treatments significantly reduced ulcer sizes over time, with Group B showing a slightly faster reduction.

Table 2: Ulcer Sizes Over Time (mm)

Time Point	Group A (2% Curcumin Gel)	Group B (0.1% Triamcinolone Paste)
Baseline	5.2 ± 0.9	5.0 ± 0.8
Day 3	3.5 ± 0.7	3.0 ± 0.6
Day 7	1.8 ± 0.5	1.5 ± 0.4

Statistical Analysis: Paired t-tests showed significant reductions in pain scores and ulcer sizes within each group from baseline to day 3 and day 7 ($p<0.05$). ANOVA indicated that the reduction in pain scores and ulcer sizes was significantly greater in Group B compared to Group A ($p<0.05$).

Table 3: Statistical Analysis of Pain Scores and Ulcer Sizes

Measure	Group A (p-value)	Group B (p-value)	Between Groups (p-value)
Pain Score	<0.001	<0.001	0.032
Ulcer Size	<0.001	<0.001	0.045

- Both 2% curcumin gel and 0.1% triamcinolone oral paste effectively reduced pain scores and ulcer sizes over the study period.
- Triamcinolone oral paste demonstrated a slightly faster reduction in both pain scores and ulcer sizes compared to curcumin gel.

DISCUSSION

The management of oral aphthous ulcers remains a clinical challenge due to their recurrent nature and the significant discomfort they cause. This study aimed to compare the efficacy of 2% curcumin gel and 0.1% triamcinolone oral paste in reducing pain and ulcer size in patients with oral aphthous ulcers. Our findings indicate that both treatments are effective, with triamcinolone oral paste demonstrating a slightly faster reduction in pain and ulcer size.

Curcumin, the active component of turmeric, has been widely studied for its anti-inflammatory, antioxidant, and wound-healing properties (1). Previous research has shown that curcumin can modulate inflammatory pathways, inhibit the production of pro-inflammatory cytokines, and promote tissue repair (2,3). In our study, patients treated with 2% curcumin gel experienced significant reductions in pain and ulcer size, which aligns with findings from earlier studies on curcumin's therapeutic effects on oral mucosal lesions (4,5).

Triamcinolone acetonide is a potent synthetic corticosteroid with well-documented anti-inflammatory and immunosuppressive effects (6). Topical application of triamcinolone paste has been shown to be effective in reducing the symptoms of oral aphthous ulcers by decreasing inflammation and promoting healing (7). In our study, patients treated with 0.1% triamcinolone oral paste experienced a more rapid reduction in pain and ulcer size compared to those treated with curcumin gel. This is consistent with previous studies that have reported the superior efficacy of corticosteroids in managing oral ulcerative conditions (8,9).

The faster reduction in pain and ulcer size observed with triamcinolone paste may be attributed to its potent anti-inflammatory action, which rapidly reduces local inflammation and discomfort (10). However, it is important to consider the potential side effects of long-term corticosteroid use, including mucosal thinning and systemic absorption, which may limit their use in chronic cases (11-13).

Despite the promising results, this study has several limitations. As a retrospective analysis, it is subject to biases inherent in retrospective data collection. The sample size, although adequate for preliminary analysis, may not be representative of the broader population. Future prospective studies with larger sample sizes and randomized controlled trials are needed to confirm these findings and establish definitive treatment guidelines.

CONCLUSION

In conclusion, both 2% curcumin gel and 0.1% triamcinolone oral paste are effective in managing pain and reducing the size of oral aphthous ulcers. Triamcinolone paste demonstrated a slightly faster therapeutic effect, but the long-term safety and potential side effects need to be considered. Curcumin gel, with its natural anti-inflammatory properties, offers a viable alternative for patients seeking non-steroidal treatment options.

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