ORIGINAL ARTICLE

Effectiveness of Triamcinolone Acetonide Ointment and Bovine Basic Fibroblast Growth Factor in the Treatment of Minor Recurrent Aphthous Ulcer

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ABSTRACT

Aim: To compare the efficacy of triamcinolone acetonide ointment and bovine basic fibroblast growth factor in the treatment of minor recurrent aphthous ulcer.
Study Design: Comparative study
Place & Duration: Deptt of Medicine, Rehman Medical College Peshawar from 1st August 2018 to 31st July 2019.
Methodology: Fifty patients were included in the study. Patients were randomly divided into 2 groups, each containing 25 patients. Group A was treated with 0.1% triamcinolone acetonide oral ointment (5 g/tube, once a day), while group B was treated with recombinant bovine basic fibroblast growth factor (21000IU/5g/tube, three times a day). Patients in the two groups were compared on the basis of visual analog score, time of target ulcer pain relief, target ulcer area index, target ulcer exudation and hyperemia score on 1st, 3rd, 5th and 7thday of visit.
Results: The healing time of target ulcer in group A and group B was 4.40±1.09 and 6.09±1.50 days respectively, with statistically significant difference (p<0.0001). The onset time of target ulcer analgesia in group A was shorter than that in group B, with statistically significant difference (p<0.001). Visual analog score of group A on day 3 and 7 were significantly improved than group B with p<0.05 each while insignificant differences were found on day 5. On day 3, the target ulcer area index of group A was significantly better than group B (p=0.003). On day 5, the exudation and hyperemia score of group A were improved than group B, with statistically significant difference (p<0.05 each).
Conclusion: Triamcinolone acetonide oral ointment is more effective than basic fibroblast growth factor in the treatment of minor recurrent aphthous ulcer.
Keyword: Triamcinolone acetonide, Aphthous ulcer, basic fibroblast growth factor.

INTRODUCTION

Recurrent aphthous ulcer (RAU) is one of the most common types of oral mucosal ulcers. Cause can be genetic, vitamin or trace element deficiency, hormonal imbalance, immune system malfunctioning, traumatic injuries, various foods, drugs and infections. Systemic diseases may lead to the development of the aphthous ulcers.[1] Because of the diversity and complexity of the etiology, there is no specifiedtreatment to cure these ulcers. Therefore, the main stay of treatment is still the topical/local application of drugs. In addition to topical drugs, other drugs can be used, once its relation with other disease is confirmed. The aim of topical treatment is to promote the healing of ulcer and to relieve pain of the patients[2-4].

Clinically, triamcinolone acetonide oral ointment is used for the treatment of RAU because of its anti-inflammatory, analgesic and anti-allergic effects. All of these effects lead to the promotion of ulcer healing and delay stomatitis.[5-7] Triamcinolone acetonide has been shown to inhibit collagen synthesis and fibroblast growth in vitro. It has been reported that treatment of fibroblasts with triamcinolone acetonide results in a reduction in TGF-β expression.[8]

Some studies have reported the use of bovine basic fibroblast growth factor (bFGF) in the treatment of RAU[4]. As bFGF stimulates proliferation of cells,therefore, it was identified as potential repair factor.[9,10] Basic FGF enhances the endothelial cell proliferation and physical organization of endothelial cells into tube-like structures.It also stimulate the repair of injured skin and mucosal tissues by stimulating the proliferation, migration and differentiation of epithelial cells, and have direct chemotactic effects on tissue remodeling[11].

As both triamcinolone acetonide, as well as bFGF showed effectiveness in the treatment of RAU. Therefore, the present study was undertaken with the objective to compare the efficacy of triamcinoloneacetonide with basic fibroblast growth factor as a therapeutic agent for the treatment of RAU. The result of the study will provide a good insight in the treatment of RAU.

MATERIALS AND METHODS

This comparative study was conducted in a Department of Medicine, Rehman Medical College Peshawar from 1st

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August 2018 to 31st July 2019 and comprised 50 patients. Patients were randomly divided into two groups, each containing 25 patients. Group A was treated with 0.1% triamcinolone acetonide oral ointment (5g/tube, Galxo Smith-Kline Company) once a day for 7 days, while group B was treated with recombinant bovine basic fibroblast growth factor (21000IU/5g/tube, Bei Fuxin Company, Hong Kong) three times a day for 7 days. All the patients presented during study period with minor aphthous ulcer (not more than two days old) who have not taken any treatment for it were included in the study with informed and voluntary participation. Those patients who were already taking medicines (like immunosuppressant, NSAIDs, steroids, anti- histamine, antibiotics) for other associated disease and showing beneficial effects in treating aphthous ulcer as well, were excluded from the study. Similarly, pregnant& lactating women, allergic patients, patients presented with fungal, viral or bacterial oral infections were also excluded. Confidentiality of the patients was maintained and other clinical ethics were followed in the study.[12-14]

During treatment, the patients were advised to revisit the clinic for the evaluation of ulcer on 3rd, 5th and 7th day of treatment. They were evaluated by the criteria of evaluation index, which include the healing time of ulcer index, target ulcer pain index, target ulcer area index, exudation and congestion score.

Target ulcer pain index: (i) VAS: Pain intensity of patients with aphthous ulcer was noted by using a visual analog scale (VAS) of 0–10 (with 1 mm division, where “0” is no pain and “10” is worst possible pain).[15] (ii). Effective time of target ulcer pain relief: First after medication. The time when the absolute value of pain intensity decreased to 2 points.[6] Likert-type scale was used, Scoring was done as 0, when none of the time; 1, little of the time; 2, some of the time; 3, most of the time; 4, all of the time.[16] Target ulcer area index: The diameter was measured with sterile vernier scale in mm.[17] Target ulcer exudation score:exudation was scored as; 0 = no exudation, 1 = mild exudation, 2 = moderate exudation, 3 = severe exudation Target ulcer hyperemia score:it was scored as; 0 = no congestion, 1 = light red, 2 = dark red, 3 = purple red.

SPSS 25.0 software was used for data analysis. Repeated measurement analysis was used for comparison between groups at multiple time points. Single factor analysis of variance was used to compare the mean value. Kruskal-Wallis test was used for comparison betweenthe groups. Healing time Log-rank test was used for comparison, and Bonferroni test was used for multiple comparisons. P < 0.05 was statistically significant.

RESULTS

The age of participants in group A was 40.50±10.60) years, 13 were male and 12 were female. In group B the age of participants was 40.71±12.45 years, 13 were males and 12 were females.The healing time of target ulcer in group A and group B was 4.40±1.09and6.09±1.50 days respectively.Log-rank and Bonferroni correction test results for meantime, the differences between group A and group B were statistically significant (p<0.0001).On the 3rdday of treatment, the pain score of target ulcer in group A was significantly higher as compared to group B with p < 0.001.After 5 days of treatment, the pain score of target ulcer in group A was a bit higher than group B but the difference was statisticallyinsignificant (p = 0.370). After 7 days, the pain score of target ulcer in group A was improved.The values were significantly higher than those in group B with p = 0.003 (Table 1).

The study found that the onset time of target ulcer analgesia in group A was shorter than that in group B. The difference was statistically significant [P<0.001] (Table 2).

On third day, the target ulcer area index of group A was compared with that of group B, the difference was statistically significant (p = 0.003). On the 5th and 7th day of treatment, the improvement value of target ulcer area in group A and group B was statistically insignificantwith p=0.349and (p=0. 480) respectively(Table 3).Only on the fifth day of treatment, the target ulcer exudation in group A was improved compared with group B, the difference was statistically significant [P = 0.005] (Table 4).The difference of hyperemia was only observed on the 5th day of treatment. Statistical significance [P = 0.010] (Table 5).

Table 1: VAS pain score at different time groups

Group	Before medication VAS	After medication VAS		
		Day 3	Day 5	Day 7
A (n=25)	5.39±1.50	3.60±0.75	1.51±1.00	0.20±0.40
B (n=25)	4.86±1.30	2.61±0.77***	1.20±0.66	0.95±0.89**

*P<0.05, **P<0.01, ***P<0.001

Table 2: The meso-position of analgesic time among two groups

Group	No.	Median pain relief time(d)
A(n=25)	23	2.60
B (n =25)	22	3.71*

*P<0.05

Table 3: Changes of ulcer area at different time among two groups (mm)

Group	Before medication ulcer area	After medication of ulcer area		
		Day 3	Day 5	Day 7
A (n=25)	7.71±6.40	4.01±4.60	1.50±1.20	0.90±2.82
B (n=25)	9.10±10.56	1.32±2.10**	2.49±3.45	1.40±3.29

**P<0.01

Table 4: The exudation scores on the fifth day of medication among two groups (n)

Group	Score			
	1	2	3	4
A (n=25)	19	2	-	-
B(n=25)	12	9	-	-

Table 4: The hyperemia scores on the fifth day of medication among two groups (n)

Group	Score			
	1	2	3	4
A (n=25)	20	1	-	-
B(n=25)	13	8	-	-

DISCUSSION

Recurrent aphthous syndrome is the most frequent chronic disease of the oral cavity, with high recurrence rate and

affecting 5-25% of the population. It is more common in patients between 10-40 years of age, and predominantly affects individuals of higher socioeconomic levels.The underlying etiology remains unclear, though a series of precipitating factors are identified. Till now no specific curative treatment is available.[18]

In this study, efficacy of group A (treated with triamcinolone acetonide) was compared with group B (treated with bFGF) in the treatment of RAU. They were equated in terms of target ulcer healing time, VAS of target ulcer pain, time of target ulcer pain relief, target ulcer area index, exudation and hyperemia score of target ulcer. Group A was much significantly improved than group B in all the parameters with p-value <0.05 each.

Chandak et al[15] conducted a study in India patients were enrolled in the study after clinical examination and documentation of clinical history with the duration of ulcer not exceeding 72 hours. On clinical examination, pain intensity using a visual analog scale (VAS) of 0–10, number of ulcers, size of each ulcer, and the duration of each ulcer (the day of onset of the first prodromal symptom of each ulcer) were recorded. Treatment with 0.1% triamcinolone acetonide was administered on the day of the initial visit and the patient was asked to refrain from eating or drinking for 2 hours. Pain intensity on VAS scale was 3.60 before treatment and 2.13 after treatment. Pain reduction in VAS-after treatment was 40.8% on day 1 of treatment. Ulcerhealing time was 5.13±0.915 days.[15] Same results were found in our study.

Similar study was performed by Sharma and his colleagues[19] from July 2014 to June 2015. The sample consisted of patients with known history of recurrent minor ulcers with size less than 10 mm in diameter and duration less than 72 hours. They used different treatment regimens to treat RAU. Triamcinolone acetonide (0.1%) significantly reduced the ulcer size, VAS for pain and exudate score.The results of this study are in accordance with the results of our study.

Another study investigated the effectiveness topical application of bFGF paste in the treatment of minor RAU.Pain levels and the ulcer size were evaluated. A total of 129 participants completed the study. bFGF paste was consecutively applied 4 times per day for 5 days.Pain intensity and ulcer size was reduced.[20]This study has also shown improvement in the intensity of pain and reduction in the ulcer size. Certain studies suggest that recombinant bovine bFGF can promote wound healing. It has anti-inflammatory, analgesic anddetoxifying effects.[4]

CONCLUSION

Triamcinolone acetonide oral ointment is more effective than basic fibroblast growth factor in the treatment of minor recurrent aphthous ulcer.

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