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Role of Onion Extract in Post Electrical Burn Scar

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Abstract

An imbalance of collagen synthesis and degradation is the most common cause of scarring. Onion extract inhibits fibroblast activity, which helps to reduce scar formation. Despite the fact that onion extract is used in a variety of commercial products, the precise molecular mechanisms by which onion extract reduces scar development in the skin are yet unknown. The aim of this study is to evaluate the effectiveness of onion extract gel in improving the post electrical burn scar.

Keywords: Onion Extract; Post Burn; Electrical Scar.

INTRODUCTION

Plastic surgery has undergone gradual evolution over time, the basic concept of methods of reconstruction ranked by complexity has been preserved and propagated in multiple forms. Most descriptions start with closure by secondary intention, followed by direct closure, local flaps and distant flaps. Various authors have made finer distinctions among local, regional, and free flaps and inserting tissue expansion somewhere in the spectrum. The complex wound pattern has initiated efforts to create new and innovative techniques in tissue regeneration which creates a scar. Wound healing includes three phases-inflammation, tissue formation, tissue remodelling which is a complicated and dynamic interaction process. Scar from surgical wounds can range from asymptomatic to cosmetically unattractive.[1] Intralesional steroid injection, surgical excision, cryotherapy, irradiation, dermabrasion, pulse and carbon dioxide laser therapy were few of the well proven scar treatment available. These treatments have varying degrees of efficacy and necessitate numerous sessions of therapy. As a result, hypertrophic scar and keloids must be prevented and identified early in order to be managed effectively. In our study we discuss role of onion extract in scar reduction in post electrical burn scar.

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MATERIALS AND METHODS

This study was done at tertiary care hospital after obtaining approval of departmental scientific and ethical committee. Informed consent was obtained from the patient. This is a prospective descriptive non randomised case study about a 35 year old male sustained electrical burn injuries while working at construction building. He

sustained electrocution by contact with electric wire as it fell on patient body. Patient initially went to local hospital, then arrived to our emergency department with an electrical burn in the anterior aspect of the chest (entry zone) and the left foot (exit zone). The chest had a contact with a 220 V of alternating current. It was presumed that the current entered his chest and exited through his left thigh. The other external skin injury to abdomen and both thighs and arm. Multiple second degree superficial burns involving chest and abdomen (anterior aspect), bilateral arms (anterior aspect), bilateral thighs, multiple blisters over thigh, legs. The serum electrolytes, urea and creatinine, urine analysis, electrocardiogram, chest x-ray were normal, urine myoglobin negative. He was resuscitated with the standard WHO burn protocol. The patient was extubated after three days of intensive care. Initially, the patient is treated on conservative management and the patient developed raw area on right sided chest wall, abdomen, thigh for which Split skin grafting is applied which is taken from both thighs. After 3 weeks patient developed scar over chest, abdomen, both thighs (fig. 1). In our case, we used commercially available onion extract gel (Mederma). The cost of 20 g tube is around 380 rupees in Indian market. The patient was advised to apply the onion extract gel twice a day for 6 weeks, to assess the response to the treatment (fig. 2).

Fig. 1: Post electrical burn scar

Fig. 2: Onion extract (Mederma)

RESULTS

In our study, we used commercially available onion extract gel available in the market. We advised the patient to use the gel twice a day for 6 weeks. After application of onion extractgel, Vancouver scar scale improved from 9/13 to 5/19 and scar is improved clinically (Table 1).

DISCUSSION

During the wound healing process, the production of matrix metalloproteinase

Table 1: Vancouver scar scale before and after Onion extract application

Components	Before application	After Application
Vascularity	2	1
Pigmentation	2	1
Pliability	3	2
Height	2	1
Total Score	9	5

(MMP)-1 causes the breakdown of extracellular matrix (ECM) components, including type I collagen. To encourage re-epithelialization, MMPs can break components of cell-cell junctions and cell-matrix interactions inside the epithelium. MMP-1 is present in human cutaneous wounds during the re-epithelialization process, but it disappears once the lesion is closed. The ECM must be altered in order for wound healing to be resolved and scar formation to be reduced. MMPs are thus important regulators of a variety of tissue repair processes.[2,3]

Excessive extracellular matrix accumulation may result in the formation of a hypertrophic scar or keloid if MMP-1 activity is imbalanced between ECM syntheses during the wound healing process. Excessive type I collagen build-up, decreased MMP-1 activity, and elevated TIMP-1 expression may all play a role in both pathologic situations. In various investigations, onion extract has been demonstrated to suppress fibroblast growth. Onion extract is thought to be involved in fibroblast inhibition and anti-proliferative. Onion extracts itself can induce the modification of ECM through up-regulation of MMP.[4]

CONCLUSION

Topical onion extract appears to be a useful treatment modality for scar management. In our study after application of onion extract on post electrical burn scar, Vancouver scar scale score and clinically showed improvement.

Conflicts of interest: None

Authors' contributions: All authors made contributions to the research, is putatively expected to be useful article.

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