

Research Article

Efficacy and Safety of Intralesional Normal Saline in Atrophic Acne Scars

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Abstract

Objective: To determine the efficacy and safety of intralesional injection of normal saline in mild to moderate atrophic acne scars.

Methods: Thirty patients having mild to moderate atrophic acne scars according to quantitative grading system were enrolled. Photographs were taken before and after each session. Injections of normal saline were given at weekly interval for 10 sessions. 4-10 ml was injected depending upon the number of scars. Efficacy was assessed after last session. Side effects, if any, were also recorded.

Results: Out of 30 patients, mean age was 25.83±4.32 years. 9 (30%) patients were male and 21 (70%) patients were females. 7 (23.3%) patients had mild acne scars while 23 (76.7%) patients had moderate acne scars. Efficacy was observed in 25 (83.3%) patients while safety was noted in 26 (86.7%) patients.

Conclusion: Intradermal injection of normal saline into atrophic facial scars can be used as safe and effective treatment.

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Introduction

Acne vulgaris is a common disease affecting adolescents patients.¹ It is a multifactorial disease characterized by formation of comedones, papules and pustules appearing mostly on face, chest, back and upper limbs.² Excessive sebum production, propionibacterium acnes colonization, hyperkeratinization of follicular duct and inflammation play important role. This disease is mostly followed by pigmentation and scars.³

Acne scars are divided into two groups as atrophic and hypertrophic. These atrophic scars are further divided into ice-pick, rolling and boxcar scars. These

scars are very disfiguring and lead to disfigurement and psychosocial consequences. Atrophic acne scarring occurs due to incomplete resolution and healing damage caused by around the pilosebaceous follicles during active inflammation.³

Global acne scarring classification is a qualitative system based on scar morphology and the ease of masking by makeup. Severity ranges from macular scarring (grade 1), mild atrophy or hypertrophy not evident at 50 cm or greater and masked by makeup or beard hair (grade 2), moderate scarring not masked by makeup or beard hair (grade 3) and severe scarring (grade 4).⁴

Atrophic acne scars present a therapeutic challenge. The available modalities to treat acne scars are limited. Several modalities such as chemical peeling, dermabrasion, dermal fillers, lasers and subsicion are being used for acne scar treatment. The efficacy of these methods is limited and there is currently no gold standard treatment modality.⁵

In our study we used normal saline to treat acne scars. It is being used worldwide and is easily available and economical. No such study has been previously conducted in our setup.

Methods

The study was conducted in department of Dermatology unit II, King Edward medical university / Mayo hospital, Lahore and Gujranwala medical, college, Gujranwala. It is a quasi experimental study and started from May 2016 to June 2017. Thirty patients of either gender ranging from 15 to 35 years with mild to moderate atrophic facial scars were enrolled in the study after informed consent. Pregnant women, patients having severe acne scars, hypertrophic scars, active viral, bacterial and fungal infections on face were excluded from the study. Detailed demographic profile was recorded. Photographs were taken before and after each session of intradermal injection of normal saline at weekly intervals. 4-10 ml is injected depending upon the number of scars. A total of 10 sessions were completed. All the information was recorded before next injection. Treatment was considered effective if there is $\geq 50\%$ decrease in global acne scaring score. Safety was measured in terms of no pain, no swelling and no erythema.

Data was analyzed using SPSS V-21. Quantitative variables like age and score at weekly intervals were presented as mean \pm SD. Qualitative variables like gender, efficacy and safety was presented as frequency and percentage.

Results

A total of 30 cases fulfilling the inclusion / exclusion criteria were enrolled to determine the efficacy and safety of intralesion normal saline in atrophic acne scars.

Demographic characteristics of the patients are shown in Table-I. Mean age of the patients was

25.83 \pm 4.32 years. Out of 30 patients, 9 (30%) patients were male and 21 (70%) patients were females. 7 (23.3%) patients had mild acne scars and 23 (76.7%) patients had moderate acne scars.

Table II shows the mean + SD of scar severity scores and lesion counting score of all patients from baseline up to the last session at 10th week. Finally the final scores obtained by multiplying the above two parameters are written in last column.

Table III shows the efficacy and safety of intralesion normal saline. Efficacy was observed in 25 (83.3%) patients while safety was noted in 26 (86.7%) patients.

Table 1: Demographic Characteristics

Demographic characteristics (n = 30)	
Age	Mean 25.83 \pm 4.32
Gender	
Male	9 (30%)
Female	21 (70%)
Severity of acne scars	
Mild acne scars	7 (23.3%)
Moderate acne scars	23 (76.7%)

Table 2: Descriptive Statistics of Scoring System

Time period	Scar severity score	Lesion counting score	Final score
At baseline	4.9 \pm 1.47	42.17 \pm 17.89	225 \pm 136.42
At 1 st week	4.87 \pm 1.53	41.9 \pm 17.91	222.23 \pm 136.84
At 2 nd week	4.87 \pm 1.53	39.9 \pm 18.85	211.63 \pm 138.93
At 3 rd week	4.8 \pm 1.52	38.37 \pm 19.73	202.57 \pm 142.63
At 4 th week	4.8 \pm 1.52	37.03 \pm 19.19	195.83 \pm 138.34
At 5 th week	4.37 \pm 1.56	34.47 \pm 18.65	169.13 \pm 134.55
At 6 th week	4.17 \pm 1.58	32.5 \pm 18.81	156 \pm 134.71
At 7 th week	3.97 \pm 1.54	30.2 \pm 18.74	141.1 \pm 132.71
At 8 th week	3.77 \pm 1.38	27.9 \pm 18.62	126.43 \pm 129.87
At 9 th week	2.97 \pm 1.56	25.4 \pm 17.94	99.33 \pm 128.31
At 10 th week	2.87 \pm 1.43	22.3 \pm 17.18	84.47 \pm 114.91

Table 3: Efficacy and Safety of Normal Saline

Variables (n = 30)	Present	Absent
Efficacy	25 (83.3%)	5 (16.7%)
Safety	26 (86.7%)	4 (13.3%)

Case I:



Acne scars on one side at baseline



Acne scars on one side after treatment

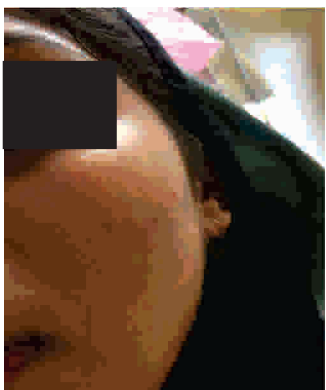


Acne scars on other side at baseline



Acne scars on other side after treatment

Case II:



Acne scars on one side at baseline



Acne scars on one side after treatment

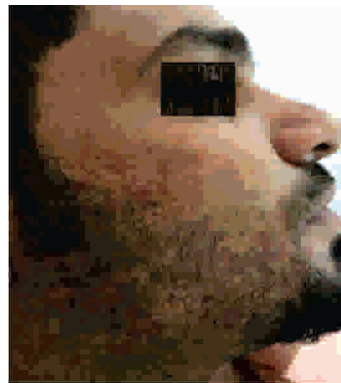


Acne scars on other side at baseline

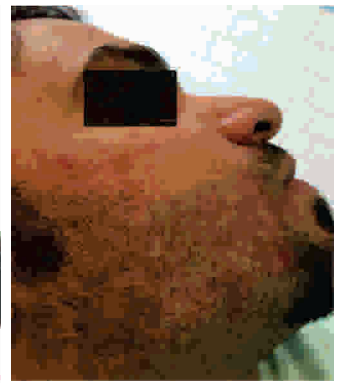


Acne scars on other side after treatment

Case III:



Before Treatment



After Treatment

Case IV:



Before Treatment



After Treatment

Case V:



Before Treatment



After Treatment

Discussion

Almost all adolescents scars are due to acne and occur in about 95% of patients leading to psychological stress in many patients. Acne scarring is divided into atrophic or hypertrophic. Atrophic scars are subdivided further into boxcar, icepick, or rolling scars.⁶

For the treatment of acne scars many options are used like chemical peeling, dermabarasin, ablative lasers, dermal fillers aand surgical techniques e.g. Subcici-

sion or punch excision and elevation. According to the type of acne scarring, multiple treatment modalities may be used.⁷

Intradermal saline injection have been tried in various studies for the treatment of many dermatological atrophic lesions and they proved to be effective. Therefore, we tried this treatment modality for the acne scars as well.

Treating atrophic acne scars with normal saline injections was tried for the first time in Pakistan. Internationally only one, study by Noshin Bagerani and Bruce R Smoller from study Iran has been published till date. In this among the 12 cases studied 10 (83.3%) cases were female and 2 (16.7%) cases were male. After the fifth session the response score were $10.0 + 0.9$, $10.0 + 1.01$, $10.4 + 1.3$ and $10.3 + 1.3$ for ice pick, box scar, rolled scars and pores respectively.¹³ These results are comparable with our study. Efficacy was noted in 25(83.3%) patients while safety was observed in 26(86.7%) patients with mild to moderate acne scars.

The proposed mechanism of action of this method could be disruption of collagen fibres anchoring the superficial dermis to dermal and subdermal layers leading to stimulation of fibroblasts and subsequent collagen stimulation and remodeling of extracellular matrix.

This study shows promising results management of acne scars which are atrophic. We suggest more extensive studies and long term follow-up of the patients treated with this modality.

Conclusion

Inflammatory acne can lead to permanent scarring. Many treatment modalities have been used to treat

atrophic scars but their efficacy and safety is limited due to side effects. Intralesional normal saline injections could be an effective and safe method for treating mild and moderate acne scars.

Ethical Approval: Given

Conflict of Interest: None

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