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ASSESSMENT OF THE EFFECT OF POST-ACNE SCARS ON THE QUALITY OF LIFE IN PATIENTS TREATED WITH FRACTIONAL CO2 LASER

Dermatology

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ABSTRACT

Introduction: Although research has been conducted on the psychosocial impact of post-acne scarring in young people, and there have been few reports on the consequences of post-acne scarring on the quality of life. In fact, there are barely any reports of the change in quality of life (QOL) post acne scar management. **Aims and objectives:** This study was intended to assess the impact of acne scarring on the quality of life in patients before initiating acne scar management with C02 laser and the improvement in quality of life after the completion of therapy. **Materials and methods:** Patients over the age of 18 years with atrophic acne scars were included to be a part of the study. The dermatology life quality of life index (DLQI) and The facial Acne Scar Quality of Life (FASQoL) was assessed at baseline. The cases were subjected to CO2 laser sessions. The improvement in quality of life was assessed using the change in scores of DLQI and FASQoL.**Results:** This study included 100 cases with acne scars. The mean DLQI score of our at baseline was 8.19±1.33 while the mean FASQoL score was 12.49±1.02. Females had a significantly higher impact on quality of life at baseline. After completion of CO2 laser therapy treatment, there was a significant fall in the DLQI score. The DLQI score reduced to 4.18±1.87 (p value-0.0001), while he mean FASQoL also reduced to 5.31±0.24. The improvement was highly significant (p value=0.0001). **Conclusion:** Post-acne scars have a considerable detrimental impact on patients' QOL, emphasizing the importance of increasing public awareness through education programs and early treatment. Fractional laser treatment is quick and easy for these individuals and provides a significant improvement in the patient's quality of life.

KEYWORDS

INTRODUCTION

Acne vulgaris (AV) is one of the most common skin disorders that begin in adolescence. The reported prevalence of AV is anywhere between 30% to 100%.[1] Acne vulgaris is the third most common skin condition seen in the dermatology outpatient department.[2] Acne scarring is a well-known and prevalent consequence of acne vulgaris. Early and timely management of acne vulgaris is quintessential in preventing post-acne scarring and the subsequent unfavorable psychosocial deficits caused by emotions of embarrassment, low self-esteem, and frustration. Of late, a handful of minimally invasive and non-invasive modalities have emerged for the management of acne scars. These include chemical peels, derma roller, microdermabrasion, laser resurfacing, and derma fillers to name a few.[3-8] Although research has been conducted on the psychosocial impact of post-acne scarring in young people, and there have been few reports on the consequences of post-acne scarring on the quality of life. In fact, there are barely any reports of the change in quality of life (QOL) post acne scar management.

This study was intended to assess the impact of acne scarring on the quality of life in patients before initiating acne scar management with C02 laser and the improvement in quality of life after the completion of therapy.

MATERIALS AND METHODS

The study was conducted at our dermatology outpatient department after obtaining due approval from the institutional ethics committee. We included 100 acne scar patients with different types of atrophic acne scars, after obtaining written informed consent. Inclusion criteria were cases over the age of 18 years, with post-acne icepick, rolling scar, or boxcar scars. Exclusion criteria were the use of oral retinoids within 6 months of the laser treatment; the use of anticoagulant therapy; the patient's age under 18; the presence of popular or hypertrophic scars, and the presence of systemic disorders were all excluding factors in the study.

The severity of face atrophic acne scars was assessed using the Self-assessment of Clinical Acne-Related Scars (SCARS) questionnaire.[9] Patients were shown photographs of several forms of post-acne scars to assist them to identify atrophic scars. The SCARS questionnaire consists of five questions, each with five alternative answers that are scored from 0 to 4, with higher scores indicating more severe acne scarring. SCARS scores are clinically interpreted as follows: 0-2 means clear/almost clear scarring; 3-6 means light scarring; 7-10 means moderate scarring; and 11-20 means severe/very severe scarring. To collect the data required for the study's aims, a questionnaire was supplied to the patients. The questionnaire included demographic information and clinical aspects of patient's acne and scarring. We also noted the age of the commencement of acne lesions and scars and the self-assessment of acne and acne scars severity.

In order to assess the impact on quality of life, a Hindi validated version of the dermatology life quality index (DLQI) was supplied to the patients.[10] The facial Acne Scar Quality of Life (FASQoL)[11] based on the previous week was noted. After being told about the nature of the treatment and the research, each patient agreed to participate in the study.

Depending on the type of lesion and its depth, several techniques were used to treat the scar. Fractional CO2 laser beams of 10,600 nm were used to treat the patients. The lesion was treated directly using the static approach, while the periphery was treated with the dynamic module. It utilised varying pulse energy, power, density, and number of passes in a single session, as well as varying number of sessions based on the clinical features of the patient. Satisfaction towards the treatment was also assessed using the Likert scale of 1-5.

The DLQI questionnaire was made up of ten questions, each with four alternative responses and a score ranging from 0 to 3. The overall response scores ranged from 0 to 30, with higher values being suggestive of a higher HRQOL impairment. The following was the clinical interpretation of DLQI scores: 0-1 means no effect on QOL; 2-5 means a little effect on QOL; 6-10 means a moderate influence on QOL; 11-20 means a very significant effect on QOL; and 21-30 means an extremely huge effect on QOL.[10] The FASQoL consisted of ten questions with total score ranging between 0-40. Each question had five alternative answers and a score between 0 and 4.

The DLQI questionnaire covered the following 6 domains: Q1 and Q2 represented symptoms and sentiments. Q3 and Q4 covered the domain of daily activities. Q5 and Q6 were mostly about a person's leisure activities. Q7 inquired about the impact on school or work. Q8 and Q9 were about interpersonal relationships. Finally, Q10 addressed the difficulties associated with obtaining therapy and how they affect the quality of life.

Statistical analysis

Statistical analysis of the data was done using Statistical Package for the Social Sciences (SPSS) version 19. Mean and standard deviation was used to find the distribution of the continuous numbers while

proportions or percentages were used for qualitative variables. The Chi-square test and t-test were used as required. P < 0.05 was considered statistically significant.

RESULTS

The mean age of patients in our study was 27.3±6.4 years. The male:female ratio was 1:1.2 (45:55). The mean age of females was 25.4±6.1 years, while that of males was 29.6±6.9 years. The average age of males was significantly higher than females (p value-0.0017). The average overall duration of acne vulgaris was 4.3±2.6 years in males and 8.8±3.8 years in males (p value-0.001). Males developed more severe clinical manifestations including nodulocystic acne and acne conglobata.

At baseline, all patients had clear (18%) or almost clear (82%) acne lesions. Although, all of them had atrophic acne scars on their faces. While 31 (31%) cases had grade 2 scars, the remaining 69 (69%) had grade 3 acne scars at baseline. On the self-assessment SCARS scale, 9% of cases reported mild scarring, 48% reported moderate scarring, and the remaining 43% had severe to very severe acne scars. The most common type of scar was ice pick scars seen in 39 (39%) cases, followed by rolling scars in 35 (35%) and 26 (26%) had boxcar scars.

Acne scar severity was significantly higher in cases who had previously experienced a greater severity of facial acne with a mean scar severity score of 8.34±0.09 versus those with mild facial acne 6.89±0.21 (p value=0.001). However, we observed no difference in acne scar severity scores according to gender (p value=0.13), age group (p value=0.29), and Fitzpatrick scale (p value= 0.57).

Analyses of the Impact of Acne Scars on DLQI and FASQoL

At baseline, we observed that a majority of patients (73%) felt self-conscious about their acne scars. In fact, more than two-thirds had a negative influence on their social activities and leisure time (67%). An impact on work performance was reported by 40 (40%) subjects (figure 1). The mean DLQI score of our subjects at baseline was 8.19±1.33. In total, 38% of cases had a DLQI score of >10 at baseline, signifying a 'very large' impact on QOL. We also found that patients with a higher self-rated scar severity (SCARS) were more likely to have high DLQI scores.

The mean FASQoL score for face acne scars at baseline was 12.49±1.02. The mean score differed considerably between females and males. Females had a significantly higher score (13.66±1.04) than males (11.06±0.83) (p-value-0.0001). The most impacted domain of FASQoL was emotional well-being. The domain included the following parameters- 75% reported feeling less attractive, 65% were self-conscious of their acne scars, 68% were annoyed by their acne scars, and 73% were concerned about the scars not disappearing (figure 2). Up to 72% felt sad due to their scars and concerns about needing to conceal scars were also expressed by 49% of cases. Higher FASQoL scores were linked with increased scarring severity according to the SCARS score.

After the completion of treatment, there was a significant fall in the DLQI score. The DLQI score reduced to 4.18±1.87. There was a highly significant improvement in quality of life (p value=0.0001) (table 1). Only 7 (7%) of the patients had a DLQI score >10 at the end of the study. The mean FASQoL also reduced to 5.31±0.24. The improvement was highly significant (p value=0.0001) (table 2). There was a significant fall in the domains of emotional well-being in 88% of cases. On the Likert scale, none of the patients were very unsatisfied. While 4% of cases were unsatisfied, 10% were neutral. The remaining 33% of cases were satisfied 53% were highly satisfied.

DISCUSSION

Acne scars can have a profound and long-term impact on the psychosocial aspect of people's quality of life.[11] While many people seek therapy for atrophic acne scars, little is known about the severity of this problem. Acne scars are widely thought to have a detrimental impact on QoL. Despite the availability of various non-invasive and invasive modalities for the management of scars, the CO2 laser has remained the gold standard for managing atrophic acne scars. Although clinicians consider CO2 laser to be a promising modality for acne scars, the improvement in patient's quality of life after the completion of this therapy hasn't been widely discussed in the literature so far. The purpose of this study was to assess the in patients' quality of life before and after treatment with CO2 laser for acne scars using the DLQI and the FASQoL questionnaire.

We also supplied the patients with the SCARS system to self-evaluate the acne scar severity at baseline. It consists of a 5-item questionnaire with one theorized domain in which subjects rate the severity of acne scars as viewed in a mirror. The tool begins with two visual analogue scales to assist the patient to differentiate between active acne lesions and acne scars. FASQoL is a 10-item questionnaire consisting of three domains of the impact of acne scars on QOL. It examines the impact of scars on emotions, on the patient's social functioning, and on their school or work life on 5-point rating scale between 0-4 with a 7-day recall span.

We observed a significant improvement in both DLQI and the FASQoL score after the completion of CO2 laser therapy. There was a good agreement between the improvement in DLQI and FASQoL.

Numerous studies on the effect of fractional laser on acne scars show that the treatment is highly effective.[12-17] The majority of patients who took part in the studies noted a significant improvement in their acne scars and post-inflammatory hyperpigmentation.[17,-19]

The mean DLQI score of our patients at baseline was 8.19±1.33. These findings are comparable to another Asian study which reported the DLQI to be 8.95.[20] There is limited data in the literature on the improvement in QOL of patients with post-acne scars following treatment regimens, making the comparison of the present data a challenge. Regardless, our study provided comprehensive data on the impact of post-acne scarring on the QOL among adults.

According to research, ablative CO2 lasers are ideal for treating acne scars of grade 2 and 3.[20] In the treatment of scars, the longer it has been since the formation of a particular scar, the more serious and resistant to therapy it is. Acne vulgaris primarily affects people between the ages of 11 to 30 years.[20] Furthermore, research has also observed that females develop acne scars at a lower age than males. We also made similar observations. The mean age of patients in our study was 27.3±6.4 years. The male:female ratio was 1:1.2 (45:55). The mean age of females was 25.4±6.1 years, while that of males was 29.6±6.9 years (p value-0.001). In fact, females also had a significantly higher DLQI and FASQoL than males at baseline. A similar observation has also been made by Chuah et al.[20] These intriguing findings suggested that we should encourage female patients to seek therapy sooner and that they may require more intensive treatment and psychological counseling.

Our study was limited by a small sample size, short study duration, and inclusion of patients from only one tertiary care center.

CONCLUSION

In conclusion, our findings indicate that post-acne scars have a considerable detrimental impact on patients' QOL, emphasizing the importance of increasing public awareness through education programs and early treatment to lower the likelihood of post-acne scar development. Physicians should not overlook the QOL impairment caused by post-acne scarring in their patients. Our observations also suggest that fractional laser treatment is quick and easy for these individuals and provide a significant improvement in the patient's quality of life.

Table 1. DLQI analysis at baseline versus at the completion of treatment

Parameter	DLQI score mean ±SD	No effect score (0–1), n (%)	Mild effect score (2–5), n (%)	Moderate effect score (6–10), n (%)	Very large effect score (11–20), n (%)	Extremely large effect score (21–30), n (%)	P value*
At baseline	8.19± 1.33	8 (8%)	21 (21%)	33 (33%)	30 (30%)	8 (8%)	
After treatment completion	4.18± 1.87	22 (22%)	42 (42%)	29 (29%)	5 (5%)	2 (2%)	
Gender							0.0001
Male (baseline)	6.98± 1.21	6 (6%)	7 (7%)	17 (17%)	14 (14%)	1 (1%)	

Table 2. FASQoL at baseline versus at the completion of treatment

Parameter	FASQoL mean±SD	P value
At baseline	12.49±1.02	0.00001
After treatment completion	5.31±0.24	
Gender		
Male (baseline)	13.66±1.04	0.0001
Female (baseline)	11.06±0.83	
Male (After completion)	5.02±1.05	0.06
Male (After completion)	5.54±1.57	

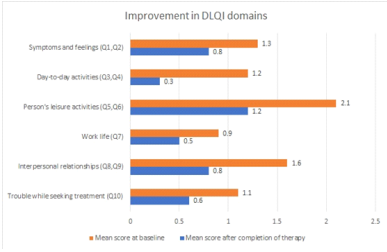

Figure 1. Improvement in DLQI domains from baseline

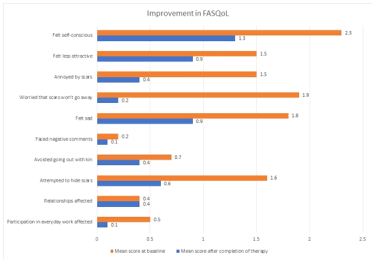

Figure 2. Improve in FASQoL domains from baseline.

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