

[B R I E F R E P O R T]

The Effect of Pulsed Dye Laser on the Dermatology Life Quality Index in Erythematotelangiectatic Rosacea Patients An Assessment

TANG NGEN SHIM, MRCP(UK); ANTHONY ABDULLAH, FRCP(UK)

Department of Dermatology, The Birmingham Skin Centre, Sandwell and West Birmingham Hospitals NHS Trust, Birmingham, United Kingdom

ABSTRACT

Background: Erythematotelangiectatic rosacea is a common cutaneous disorder. It has a major psychosocial impact on a patient's life. **Objective:** This study aims to investigate the impact of pulsed dye laser on the quality of life of affected patients as measured by the Dermatology Life Quality Index. **Methods:** The authors report a prospective study of 20 patients (in a wide range of skin phototypes) attending a laser clinic. All patients completed the Dermatology Life Quality Index questionnaires before and after three sessions of laser treatment. **Results:** The mean Dermatology Life Quality Index scores pre- and post-laser treatment were 17.3 and 4.3, respectively. All patients experienced a statistically significant improvement in their quality of life ($p < 0.0001$, paired t test). **Conclusion:** The Dermatology Life Quality Index questionnaire (pre- and post-laser treatment) is an important tool for monitoring the efficacy of therapy and patient satisfaction. (*J Clin Aesthet Dermatol.* 2013;6(4):30–32.)

Rosacea is a common skin condition characterized by symptoms of facial flushing and a spectrum of clinical signs including erythema, telangiectasia, and inflammatory papulopustular eruption. Rosacea may cause anxiety or embarrassment as the skin will appear red or flushed in appearance.¹ To this end, the Dermatology Life Quality Index (DLQI) is the widely accepted method of assessing a patient's quality of life.² There is limited study on the effect of laser treatment on the quality of life of patients with erythematotelangiectatic rosacea.^{3,4} The aim of this study is to assess the impact of DLQI scores in patients with erythematotelangiectatic rosacea treated with a pulsed dye laser.

METHODS

A total of 20 patients with erythematotelangiectatic rosacea who were referred to the laser clinic were enrolled into the study. The treatment interval was between 6 to 8 weeks. DLQI is a validated questionnaire for evaluation of quality of life of dermatology patients comprising 10

questions about disease symptoms, feelings, daily activities, clothing type, social or physical activities, exercise, job or education, interpersonal relationships, marriage/potential relationships, and treatment. The 10 questions of DLQI can be grouped using the following six headings: symptoms and feelings, daily activities, leisure, work and school, personal relationships, and treatment. The score is from 0 (without any effect on quality of life) to 30 (worst effect on quality of life). The DLQI questionnaire was used to assess quality of life before and after three sessions of laser treatment.

The patients were treated with a 595nm pulsed dye laser (PDL) (Candela Vbeam Perfecta, Syneron® Medical Ltd). An initial test spot using a fluence between 7.75 to 9.00J/cm², 7mm spot size, and a pulse width of 1.5ms pulse duration were used. Based on the biological response of the test area, the fluence was adjusted up or down as indicated by a five-minute tissue response. The treatment was performed with the smallest purpuragenic fluence according to individual response. The laser settings were

DISCLOSURE: The authors report no relevant conflicts of interest.

ADDRESS CORRESPONDENCE TO: T. N. Shim, Department of Dermatology, The Birmingham Skin Centre, Sandwell and West Birmingham Hospitals NHS Trust, Birmingham, B18 7QH, UK; E-mail: tangngee@doctors.org.uk

maintained in all subsequent treatments unless the patient could not tolerate the purpura, in which case the fluence was reduced by 0.5J/cm² or more. The cryogen device was used to minimize epidermal damage. The pulse width used in this study varied between 1.5 to 40ms. The fluence used ranged from 7.75 to 9.0J/cm². No local anaesthetics were required. Statistical analysis was performed using the paired *t* test.

RESULTS

Of the 20 patients in the study, 11 were female and 9 were male with a mean age of 42 years (range = 27 to 58 years). Five patients had Fitzpatrick skin phototype I, four had Fitzpatrick skin phototype II, eight had Fitzpatrick skin phototype III, and three had Fitzpatrick skin phototype IV. The mean baseline DLQI score was 17.3. The mean DLQI score following three treatments was 4.3 (Table 1). The highest mean score was attained for symptoms and feelings followed by leisure (Table 2). The improvement was statistically significant ($p < 0.0001$, paired *t* test). PDL had a positive effect in all six subcategories of the DLQI index (Table 2).

DISCUSSION

Rosacea is a common chronic skin disease affecting the face, characterized by frequent flushing, persistent erythema and telangiectasia. Inflammation, such as swelling, papules and pustules, are evident. It is more common in fair skin, although all skin types may be affected. Perilesional erythema is directly related to contiguous inflammatory lesions. "Background" or diffuse facial erythema occurs independent of inflammatory lesions. It is typically persistent after inflammatory lesions have resolved or between flares. Although topical and oral treatments are effective for inflammatory lesions and perilesional erythema, they have limited effect on diffuse facial erythema and telangiectasia. Vascular laser (e.g., PDL) and intense pulsed light are capable of reducing both erythema and telangiectasia.⁵ The reduction in flushing may result from destruction of the excessive cutaneous vasculature associated with rosacea. Vascular laser and intense pulsed light also improves secondary problems, such as burning or stinging sensations, by reducing substance P.⁶ This is highly desirable as a red face can be a source of personal embarrassment, emotional distress, and social isolation. The efficacy and safety profile of PDL in the treatment of erythematotelangiectatic rosacea are well established.^{7,8} However, there are very limited studies evaluating its efficacy on quality of life.^{3,4}

This study has demonstrated that erythematotelangiectatic rosacea impairs quality of life as measured by the DLQI. The authors have also shown that laser treatment significantly produced a reduction in DLQI score. In this study, four patients reported a DLQI score of 0 post-laser therapy.

Cosmetic camouflage can be used to cover the signs of rosacea as well.⁹ However, six of the patients in this study commented that cosmetic camouflage may be time

TABLE 1. DLQI scores pre- and post-PDL treatment

PATIENT	DLQI (PRE-TREATMENT)	DLQI (POST-TREATMENT)
1	16	5
2	16	3
3	21	9
4	12	3
5	9	1
6	15	2
7	18	11
8	10	3
9	8	2
10	27	7
11	16	0
12	28	9
13	14	0
14	12	3
15	23	15
16	16	1
17	17	0
18	22	11
19	19	0
20	27	1

DLQI=Dermatology Life Quality Index; PDL=pulsed dye laser

consuming and not user friendly. Cosmetic camouflage is intended to be waterproof; however, two of the patients in the study reported that this is not the case, and, as a consequence, have limited certain everyday activity (i.e., swimming). The patients in this study also reported avoiding wearing certain colors that would accentuate the redness of their complexion.

Referral for laser treatments that are primarily aimed at

TABLE 2. PDL impact on DLQI subcategories

CATEGORY	DLQI MEAN SCORE BEFORE PDL	DLQI MEAN SCORE AFTER PDL	PAIRED T-TEST (P-VALUE)
Symptoms and feelings (maximum score=6)	4.25	1.31	<0.001
Daily activities (maximum score=6)	3.80	0.85	<0.001
Leisure (maximum score=3)	4.05	1.25	<0.001
Work and school (maximum score=3)	1.00	0.20	0.009
Personal relationships (maximum score=6)	2.60	0.45	<0.001
Treatment (maximum score=3)	1.65	0.30	<0.001

PDL=pulsed dye laser; DLQI=Dermatology Life Quality Index

improving aesthetic appearance is considered a low priority when it comes to allocating limited National Health Service resources. Treatment of facial telangiectasia following rosacea will generally be supported if there is significant withdrawal from social, educational, or work environments. There is increasing request for psychological assessment to establish the impact of this disease to justify funding. This study has reinforced the effectiveness of PDL in the treatment of rosacea in a wide range of skin phototypes and the disease impact on the psychosocial aspect of rosacea.

CONCLUSION

Laser treatment has revolutionized the management of erythematotelangiectatic rosacea not amenable to other treatment modalities. The DLQI questionnaire (pre- and post-laser treatment) is an important tool for monitoring the efficacy of therapy and patient satisfaction. Although rarely a concern for clinicians and healthcare organizations, such heightened anxiety related to a medical problem is a priority that physicians should consider.

ACKNOWLEDGMENT

The authors would like to thank Dr. A. Blann for his input in statistical analysis and DJ Dumbleton, MBE, and CD Dumbleton for proofreading the article.

REFERENCES

- Belivosky C, Ilhe F, Pernet AM. Equale study: impact of rosacea on quality of life on affected patients. *J Am Acad Dermatol.* 2007;56:AB16.
- Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI)—a simple practical measure for clinical routine use. *Clin Exp Dermatol.* 1994;19:210–216.
- Van Zuuren EJ, Kramer S, Carter B, et al. Interventions for rosacea. *Cochrane Database Syst Rev.* 2011;3:CD003262.
- Menezes N, Moreira A, Mota G, Baptista A. Quality of life and rosacea: pulsed dye laser impact. *J Cosmet Laser Ther.* 2009;11:139–141.
- Neuhaus IM, Zane LT, Tope WD. Comparative efficacy of nonpurpuragenic pulsed dye laser and intense pulsed light for erythematotelangiectatic rosacea. *Dermatol Surg.* 2009;35:920–928.
- Lonne-Rahm S, Nordlind K, Edström DW, et al. Laser treatment of rosacea: a pathoetiological study. *Arch Dermatol.* 2004;140:1345–1349.
- Jasim ZF, Woo WK, Handley JM. Long-pulsed (6-ms) pulsed dye laser treatment of rosacea-associated telangiectasia using subpurpuric clinical threshold. *Dermatol Surg.* 2004;30:37–40.
- Clark SM, Lanigan SW, Marks R. Laser treatment of erythema and telangiectasia associated with rosacea. *Lasers Med Sci.* 2002;17:26–33.
- Gupta AK, Chaudhry MM. Rosacea and its management: an overview. *J Eur Acad Dermatol Venereol.* 2005;19:273–285. ●