

IMPACT OF INTENSE PULSED LIGHT THERAPY ON THE QUALITY OF LIFE OF ROSACEA PATIENTS

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Rosacea is a chronic inflammatory skin disorder affecting predominantly adult patients. The aim of the current investigation was to evaluate clinical response by using quality of life assessment before and after an IPL (intensive pulsed light) therapy course for patients suffering from rosacea treated in the outpatient clinic “Health and Aesthetics” in Riga during a one-year period (in 2016). All patients presented with typical clinical symptoms of rosacea on the face — acneiform papules, pustules, telangiectasia, centropacial erythema, and complaints about flushing and burning. In the current study, 100 rosacea patients treated with IPL therapy were selected. Each patient filled in the quality of life questionnaire before and after two courses of IPL therapy. The interval between IPL therapy sessions was one month. The results reflected comprehensive benefit from IPL therapy for all rosacea patients. No serious side effects from IPL therapy were detected. Side effects like mild erythema after procedure (75%), mild oedema (10%), vesiculation (3%), and hyperpigmentation (8%) were completely resolved within four weeks after completion of treatment. In all patients, quality of life assessment showed a statistically significant increase after two courses of IPL therapy.

Key words: *intensive pulsed light, dermatology life quality index, rosacea, phototype.*

INTRODUCTION

Rosacea is a chronic skin disorder predominantly affecting the face. The first signs of rosacea are redness or blushing, presenting initially. Over time, the redness becomes persistent and more visible. The most common sites for symptoms are cheeks, nose, chin, and forehead. Sometimes, rosacea may involve the eyes as well, and include symptoms such as blood-shot eyes that feel gritty. Bumps, tiny pus-filled pimples, and enlarged blood vessels can also appear, giving skin a rough, uneven appearance (Schroeter and Neumann, 1998; Hernández-Pérez and Ibieta, 2002; Wong *et al.*, 2009). Rosacea symptoms can vary from one person to another with no predicting severity. Antibacterial treatment decreases inflammatory lesions, such as papulae, nodulae, pustulae, but nevertheless erythema and telangiectases. Therefore, the choice of the treatment in the outpatient's clinic “Health and Aesthetics” is intensive light therapy (IPL). Due to broad spectrum wavelength output of noncoherent light (500 to 1200 nm) the non-laser high intensity

light source performs selective photothermolysis. Individual light pulses with specific duration, intensity, and spectral distribution guarantee penetration of controlled and confined energy into the skin tissue (Raulin *et al.*, 1997; Liu *et al.*, 2014). Application of IPL in dermatology relies on the basis that certain targets for energy absorption — chromophores, such as haemoglobin, water, and melanin are capable of absorbing energy from this broad spectrum of light wavelength (absorptive band) without exclusively being targeted (Angermeier *et al.*, 1999; Clementoni *et al.*, 2006). The broad wavelength range discharged from an IPL device leads to the simultaneous emission of green, yellow, red, and infrared wavelengths, allowing the various chromophores to be targeted concurrently. With the IPL procedure the blood vessel temperature rises high enough to cause its coagulation, leading to its destruction and later replacement by fibrous granulation tissue (Schroeter and Neumann, 1998). Because of its polychromaticity, IPL can target oxyhaemoglobin (predominantly found in clinically red lesions), deoxygenated haemoglobin (predominantly in blue

lesions), and methaemoglobin, with absorption peak wavelengths of 418, 542, and 577 nm (Angermeier, 1999).

The objective was to assess the quality of life for rosacea patients before and after an IPL therapy course and to assess potential side effects after the therapy.

MATERIAL AND METHODS

Data from 100 rosacea outpatients treated in the outpatient clinic “Health and Aesthetics” in Riga in 2016 were analysed. The inclusion criteria were defined as follows: adult patients who suffered from rosacea at least for one year, had not received therapy for rosacea for at least one month before inclusion, had not received synthetic peroral retinoides or antidepressants in a period of one year, had never been diagnosed for photosensitive diseases (such as *lupus vulgaris*, allergy to the sun light), had no psychiatric diseases, who were interested in and agreed to follow the therapy regimen with IPL twice with a four-week interval, and who agreed to fill in the quality of life questionnaire twice — before IPL therapy and four weeks after the last IPL therapy course. Patients were informed that they can decline the investigation in cases of serious side effects from IPL or if they unwilling to or external factors did not allow to continue IPL therapy.

The applied method was quantitative and based on a quality of life questionnaire. The DLQI (dermatology life quality index) assessment questionnaire was adapted for rosacea patients by AY Finlay and GK Khan, April 1992 www.dermatology.org.uk (Table 1).

Each patient filled in the questionnaire twice — before and after the completed course of IPL therapy. Each patient received two courses of IPL therapy within four weeks.

Every question was answered according to the severity from 0–3, where 0 is none, 1 is a little, 2 is a lot and 3 is very much. The maximal possible points was 30, and the minimal — 0.

The clinical severity of the disease and side effects after IPL (intensive pulsed light) therapy were assessed by a certified dermatologist. The questionnaire included ten questions about self-assessment of subjective rosacea symptoms during the four-week period, such as itching/burning/flushing; about self-consciousness due to skin problems; disease impact on daily activities, social or leisure activities, doing sports, the ability to work or study, impact of rosacea on close friendships or relationship with a partner, and the impact of therapy on everyday life. Each completely answered question was assessed by a 0–3 point scale, where 0 was equated with no impact of rosacea on patient’s quality of life, and 3 reflected very strong impact of the disease on patient’s quality of life. A higher score indicated a more negative impact on patient’s quality of life. The maximal point score was 30 points (highest negative impact of the disease on quality of life), and the minimal score 0 indicated no negative impact of disease on patient’s life (see Table 1).

Table 1

DLQI QUESTIONNAIRE: DERMATOLOGY LIFE QUALITY INDEX (DLQI)

Over the last week, how itchy/stinging/painful/flushing has your face skin been	Very much		
	A lot		
	A little		
	none		
Over the last week, how much did you feel yourself uncomfortable due to the face skin problems	Very much		
	A lot		
	A little		
	none		
Over the last week, how much did your face skin problems affect social activities (e.g., going shopping or meeting friends)	Very much		
	A lot		
	A little		
	none		
Over the last week, how much did the face skin problems interact with the cosmetic product (such as face creams or decorative cosmetic) use	Very much		
	A lot		
	A little		
	none		
Over the last week, how much did the face skin problems interact with leisure activities	Very much		
	A lot		
	A little		
	none		
Over the last week, how much did the face problems interact with sport activities	Very much		
	A lot		
	A little		
	none		
Over the last week, how much did the face problems interact with work or learning	Very much		
	A lot		
	A little		
	none		
Over the last week, how much did the face problems interact with partnership or friendship	Very much		
	A lot		
	A little		
	none		
Over the last week, how much did the face skin problems interact with sexual difficulties	Very much		
	A lot		
	A little		
	none		
Over the last week, how much did the face skin problems interact with the everyday time planning (e.g., did you have to wake up earlier in the morning to take care about your face skin)	Very much		
	A lot		
	A little		
	none		

DLQI questionnaire written in the format of four columns where,

1st column – questions; 2nd column – severity description (from none to very much); 3rd column – score point (from 0–3), before the IPL therapy; 4th column – score point (from 0–3) after the IPL therapy. Score point calculation: none corresponds to 0 points; a little corresponds to 1 point; a lot corresponds to 2 points; very much corresponds to 3 points

Statistical analysis was conducted using GraphPad Prizm 4, and the Mann Whitney test was used (Table 2). Additionally, the following clinical parameters were evaluated: erythema of the central part of the face, burning or flushing, telangiectasia, and inflammatory lesions, such as papulae,

Table 2

STATISTICAL ANALYSIS: MANN WHITNEY TEST OF IPL THERAPY EFFECT ASSESSED BY DLQI BEFORE AND AFTER THE THERAPY COURSE

Parameter	Data 1
Column A	DLQI before IPL
vs	vs
Column B	DLQI after IPL
Mann Whitney test	
<i>p</i> value	$p < 0.0001$
Exact or approximate <i>p</i> value?	Gaussian approximation
<i>p</i> value summary	***
Are medians significantly different? ($p < 0.05$)	Yes
One- or two-tailed <i>p</i> value?	Two-tailed
Sum of ranks in column A, B	14645, 5455
Mann-Whitney U	405,0

DLQI, dermatology life quality index; IPL, intensive pulsed light

nodulae, pustulae, and phymae. All patients had erythema and telangiectasia centropacially and subjective signs like flushing or burning after physical activity. Phymae was not observed in this group of patients. Before IPL therapy, 8% of patients had solar lentigines, ephelides and hyperchromatic macules, typical of chronic sun exposure, complimentary to classic symptoms of rosacea.

The IPL device used in the outpatient clinic “Health and Aesthetics” can operate in wavelengths 510–950 nm, and the following filters are used for everyday work:

510–950 nm for treatment of pigment disorders, solar lentigines, superficial vascular lesions;

560–950 nm for treatment of vascular lesions, deeper pigmentary lesions;

610–950 nm for treatment of permanent hair removal in fair skin types, facial erythrosis, spider veins.

It was possible to treat various targets with the same device by applying different filters. The light source was a xenon lamp. Active cooling up to -4°C was used for each treatment session. Wavelength adjustment was realised by four interchangeable chipcard filters. The multipulse mode with range from 1–6 fold pulses and wavelength 510–950 nm was administered. IPL speed pulse repetition was done from 4 seconds; IPL pulse duration was 1–15 ms with pulse pause of 5–50 ms. IPL power was $10\text{--}60\text{ J/cm}^2$. The spectrum of power used for rosacea treatment in outpatient clinic “Health and Aesthetics” was from $24\text{--}28\text{ J/cm}^2$ with pulse delay 15 ms, and wavelength filters 510 nm and 560 nm were used. IPL pulses were adjusted according to the patient’s skin phototype (Belenky *et al.*, 2015). The routine regimen for the second skin phototype was selected to use the first sub-pulse with 9 ms and delay 15.0 ms, and the second sub-pulse — 11 ms with the 510 nm filter. For the third phototype, 3 sub-pulses were administered — the first sub-pulse was 7.0 ms and delay 15.0 ms, the second

sub-pulse — 8 ms and delay 15 ms, and the third subpulse 9 ms. No patients with the 1st, the 4th, or the 5th phototype by Fitzpatrick were treated in the group. The treatment area covered with one pulse was $12 \times 35\text{ mm}$. The relatively large footprint of the spot size and the resulting treatment speed allowed limiting the total number of pulses per treatment to a minimum. Before each IPL session, cool gel was applied on the pre-treatment area with the aim to decrease pain sensation and potential side effects.

In the rosacea group, all patients assessed that therapy was painful — in the range from 0–10 pain assessment scale with average 5 points. Nevertheless, the treatment with the IPL device was well tolerated by all patients when using standard energy settings $24\text{--}28\text{ J/cm}^2$. No topical anesthetic creams prior to treatment to alleviate some of the discomfort were used, as it was not necessary. A water-based conduction gel to enhance complete contact between the crystal square of the handpiece and the skin was used. Before the therapy, 8% of patients had solar or senile lentigines, ephelides and hyperchromatic macules, typical of chronic sun exposure, among the classic rosacea symptoms.

RESULTS

All of the rosacea patients showed improvement of life quality after the two courses of IPL treatment. Of the investigated 100 rosacea patients, 83% had the 2nd stage or the 3rd stage of rosacea and 17% had the 1st stage (Fig. 1). Those with the severe inflammatory form of rosacea received antibiotic therapy before IPL treatment, with the aim to decrease inflammatory lesions — papulae, nodulae, and pustule. The interval between the end of the antibiotic therapy and the first IPL therapy was at least four weeks, with the aim to avoid potential photosensitive reactions, especially, for those who received doxycycline peroral therapy.

The decrease in DLQI points demonstrated improvement in the quality of life of rosacea patients. In each question answered by patients who completely filled the quality of life

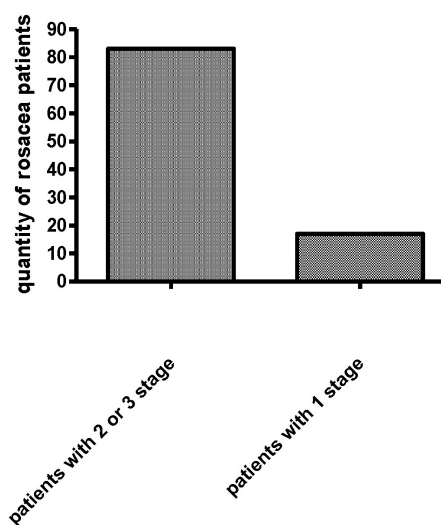


Fig. 1. Clinical severity of rosacea (number of rosacea patients with Stage 1 vs Stage 2 or 3).

questionnaire before and after IPL treatment, 0 points reflects no negative impact and 3 points indicates very strong negative impact on the quality of life.

In Table 3, DLQI values of 100 investigated patients are reported. In Fig. 2, for each patient two values of DLOI are listed — the 1st column before IPL therapy and the second column after IPL therapy. Maximal possible SCOR was 30 and minimal — 0.

Before the IPL treatment, we investigated 100 patients who answered questions about the quality of life prior to the first IPL therapy and after the two courses of IPL procedures. All of the 100 patients answered the same questions (Table 3). The minimal DLQI point level before treatment was 11 and after — 5. The maximal DLQ point level before IPL was 28 and after four IPL therapy courses — 15. The DLQI

Table 3

POINT OF SCORES CALCULATED FROM 100 COMPLETELY FILLED DLQI QUESTIONNAIRES BEFORE AND AFTER THE IPL THERAPY COURSE

DLQI		Number of cases
before IPL therapy	after IPL therapy	
28	15	5
28	14	7
28	13	6
28	12	3
28	11	5
28	10	8
28	9	8
28	8	11
27	8	1
26	15	4
26	14	1
26	13	3
26	12	4
26	11	2
26	9	3
26	8	6
25	9	1
22	9	1
22	8	3
15	8	1
15	7	1
15	6	2
15	5	2
14	5	1
11	8	3
11	7	3
11	6	1
11	5	4
Total		100

DLQI, dermatology life quality index; IPL, intensive pulsed light.

200 values, are demonstrated, since each patient filled the same DLQI twice — before the course of IPL therapy (1st column) and after (2nd column). Maximal SCOR was 30, minimal — 0.

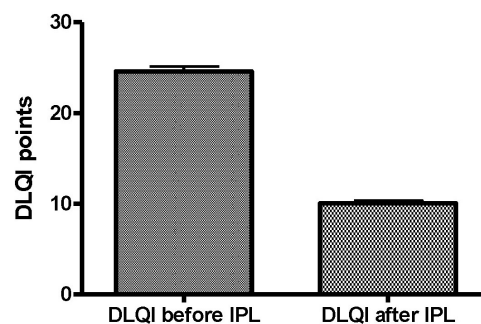


Fig. 2. DLQI before and after IPL therapy.

median point score before treatment was 28, and after — 9 points.

Side effects included temporary erythema — 75%, oedema — 10%, vesiculation — 3 %, and transient hyperpigmentation in 8% of cases (Fig. 3). All side effects were transient in a period of two-four weeks after the treatment session. No side effects like dyspigmentation, ulcers or scars were expected after two sessions of IPL therapy. We supposed that a 15-ms delay between at least two subpulses would allow the epidermis to cool down preventing thermal damage, and we adapted the energy level according to the patient skin phototype. Rosacea is a common disease in 2 and 3rd skin phototypes, and therefore the initial risk for severe complications after IPL therapy connected with phototype is low as well. Patients were asked not to use any type of UV irradiation — solarium, sunbathing, during the period of IPL therapy. Complete anamnesis about any existing diseases that could interact with the sun and information of used medications were collected from patients. Patients receiving any antidepressants and retinoids were excluded from the study. In the case of antibacterial therapy administration, a patient was eligible for the study only after a four-week wash-out period. The interval between IPL therapy sessions was four weeks. Each rosacea patient received two IPL sessions. All patients showed improvement of the quality of life after the two sessions of IPL treatment. Before the ther-

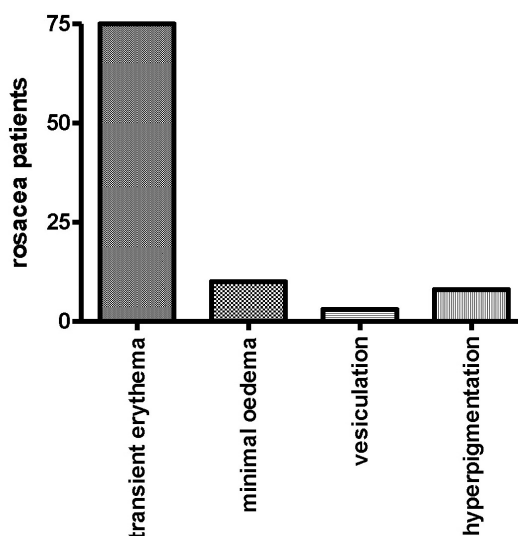


Fig. 3. Side effects after IPL.

apy, 8% of patients had solar lentigines, ephelides or hyperchromatic macules typical of chronic sun exposure, among of classic rosacea symptoms. After two courses of IPL therapy, all patients in that group presented improvement of pigmented lesions; partially in 55% and completely in 45% of cases. The transient hyperpigmentation was most likely due to pigmented lesions, such as solar lentigines, ephelides and pigmented benign macules, which changed the colour to a more visible gray-brown just after the IPL and then peeled off. That was an extra benefit from rosacea treatment with IPL. 15% of patients responded on improvement of fine wrinkles after the two sessions of IPL. Those patients who suffered from rosacea had prolonged sun exposure in their anamnesis, which aggravated redness and number of telangiectasia on the face and occasionally provoked extrinsic aging of the skin causing further breakdown of collagen fibers by oxygen radicals. The clinically assessed result of IPL treatment was decrease of dermal structural support and volume, leading to reduction in skin torsion extensibility, thereby causing the overlying redundant epidermis to wrinkle. After the IPL procedure, all patients were strongly recommended to use 50 plus UVB and UVA sunscreen creams when going out-doors.

DISCUSSION

The patients who suffered from rosacea were given two series of IPL treatment, termed "photorejuvenation". We used a 510 nm filter and energy level 24–28 J/cm² and the pulse count was adjusted according to the phototype. We obtained good results not only for rosacea improvement (decreased redness and telangiectases), but also improvement by pigmented benign lesion reduction and small wrinkle reduction (in rosacea patients). The principle behind tightening of the skin using IPL rests, is based on the theory that heating collagen fibres with high intensity light energy leads to their contracture. This leads to the textural change described in skin treated with IPL. The thermal stimulation of dermal fibroblasts by higher wavelengths like 515–950 nm within the IPL spectrum has been shown to result in increased synthesis of extracellular matrix proteins, leading to at least partial replacement of the lost dermal volume (Kimel *et al.*, 1994; Schroeter *et al.*, 2005). Because of its polychromaticity, IPL can target oxyhaemoglobin (predominantly found in clinically red lesions), deoxygenated haemoglobin (predominantly in blue lesions), and methaemoglobin (Hernández-Pérez and Ibieta, 2002). Among the variety of methods used to treat photoaged skin, IPL has gained significant interest because of rapid recovery of patients after the procedure. Dyschromia, especially of the face, is a common complaint of patients seeking photorejuvenation with laser or light technology (Raulin *et al.*, 2003). Rosacea patients who had dyspigmentation before the IPL in 100% cases showed improvement after the procedure. There was a strong relationship between the patient's skin phototype and improvement of pigmented lesions. Indeed, better results were obtained in cases of higher contrast between pigmented lesion colour and overlying

skin colour. Therefore, patients with the 2nd skin phototype showed more decrease of unwanted pigment in pigmented lesions after the IPL therapy. Localised epidermal melanocyte, melanin, or ecstasic vessel aggregates enhance the colour contrasted with the surrounding skin giving it an uneven, heterogeneous tone. The mechanism of action of IPL for treating pigmentary lesions is considered to be the result of rapid differentiation of keratinocytes induced by thermal heating. This process results in an upward transfer of melanosomes along with necrotic keratinocytes, resulting in their elimination as the microcrusts are removed from the skin surface (Belenky *et al.*, 2015).

Ephelides, senile, and solar lentigines was among unwanted pigments on the face for some rosacea patients (Goldman *et al.*, 2005). Telangiectasias are also easily treated by IPL modality, making it a good treatment for overall dyschromia, regardless of its origin. With the use of different filters, the IPL device is capable of emitting wavelength spectra in the ranges of 500 to 670 and 870 to 1400 nm, allowing it to target vascular and pigmented lesions, respectively. That provides additional benefits to a patient, as telangiectases and unwanted pigment can be treated in the same IPL course (Moreno and Ferrando, 2001).

It is important to assess each patient's skin type before the therapy and adjust the IPL settings appropriately to avoid complications (Kawada *et al.*, 2002). In darker skin types, there is a risk of inducing permanent hyperpigmentation. The immediate endpoint from IPL treatment of dyschromia should be visible darkening of the treated brown spots. These typically crust over 24 to 48 hours and peel off within seven days. This process can be accelerated by having patients apply a moisturiser twice a day or by performing microdermabrasion of the treated area 1 to 2 days following treatment (Bitter *et al.*, 2000; Schroeter *et al.*, 2005). In our clinic we do not perform microdermabrasion after IPL because of avoidance of hypersensitivity reactions. Moisturiser with dexpanthenol after IPL treatment was applied to calm the treated area.

Fine superficial wrinkles in the skin are the result of a combination of intrinsic and extrinsic aging processes. Intrinsic aging appears due to the gradual reduction of extracellular matrix proteins, such as collagen and hyaluronic acids, in the dermis. Extrinsic aging of the skin is mainly the result of long-term exposure to UV radiation from the sun, which leads to further breakdown of collagen fibers by oxygen radicals (Sorg *et al.*, 2007). The overall result is a decrease in dermal structural support and volume, leading to a reduction in skin torsion extensibility, thereby causing the overlying redundant epidermis to wrinkle (Schroeter *et al.*, 2005; Matts *et al.*, 2007).

The principle behind tightening of the skin using IPL, rests on the theory that heating collagen fibers with high intensity light energy leads to their contracture. This may account for the textural change described in skin treated with IPL, which has been reported as a secondary observation in several studies (Raulin *et al.*, 1997; Neuhaus *et al.*, 2009). Fur-

thermore, the thermal stimulation of dermal fibroblasts by the higher wavelengths within the IPL spectrum has been shown to result in increased synthesis of extracellular matrix proteins, leading to at least partial replacement of the lost dermal volume. Specifically, wavelengths in the 1200 nm spectrum are absorbed by water in the dermis, triggering a cytokine reaction, which, in turn, stimulates the formation of new collagen I, III, and elastin (Belenky *et al.*, 2015).

The intense pulsed light (IPL) source, with an emission spectrum in the range of 500 to 1200 nm, has been used for nearly 10 years to treat telangiectasias, pigmented lesions, and photoaging (Cavina, 2006; Yamashita *et al.*, 2006). Because the pulse duration is short, and because the amount of light delivered during treatment is relatively modest, IPL is considered to produce little tissue damage. It was reported (Sorg *et al.*, 2007) that skin samples exposed to IPL did not differ significantly from control skin in the extent of thymine dimer formation, but that the level of lipid peroxides in IPL-exposed skin was six times as high as in non-irradiated skin and twice as high as in skin exposed to UVA light. Although IPL irradiation does not affect thymine dimer production, because the light source does not emit in the UV range, it does produce considerable amounts of lipid peroxides, an indicator of oxidative stress. Oxidative stress has been associated with a number of deleterious effects; beyond premature aging of the skin, it has been shown to promote skin cancer in experimental animal models. Although these molecular studies do not necessarily mean that long-term adverse effects will ensue, the results point to our ignorance of IPL's lasting effects. Many highly effective therapies have had adverse effects that were not fully identified until years after regulatory approval. Thus, continuing follow-up of patients remains important (Sorg *et al.*, 2007; Weiss *et al.*, 2002).

According to observations from routine practice, intense pulsed technology is a highly versatile, safe, and effective modality for the treatment of vascular and pigmented lesions, and lesions corresponding to photoaging, as well as precancerous lesions — actinic keratoses, but physicians must to select the right patient for IPL therapy (Bitter *et al.*, 2002; Ross *et al.*, 2005). The selection of right patients mean the ruling out those patients who receive any photosensitive drugs or have any autoimmune or photosensitive disease. Extra precautions should be made for those with darker skin phototypes, such as IV–V by Fitzpatrick scale (Anderson, 1994; Weiss *et al.*, 2002). According to our clinical experience, it is important to sustain continued understanding of the technology's long-term safety and efficacy profile. The patient's satisfaction is the main goal of our therapy. More investigations have to be carried out, because of application of novel technologies with uncertain possible delayed potential side effects. The small number of investigations about potential oxidative stress lined the importance of skin biopsies for a larger group of patients. Visual good parameters are best to achieve patient satisfaction, nevertheless, additional investigations concerning possible late side effects should be performed. We expected one problem that inter-

acts with the possibility to assess skin side effects in a microscopical level — most of the patients did not agree with a biopsy from the face. Just after the IPL, we do not know the healing process after a biopsy can increase the risk of secondary infections, if patients do not properly take the needed care after the procedure. We are satisfied about good clinical parameters after IPL courses in the rosacea patients group. Patient life quality increased after two IPL courses, which is the main goal of a successful therapy course. There were no permanent clinical side effects after the IPL courses in the rosacea patients group. IPL technologies have developed rapidly since their introduction in medicine 20 years ago. Nowadays IPL is used broadly for treatment of many vascular and pigmented lesions, and removal of unwanted hair. Recently, developed IPL technologies are able to provide almost the same therapeutic effect as laser treatment.

CONCLUSIONS

In all patients quality of life assessment indicated improvement after two courses of IPL therapy. All side effects (erythema, oedema, vesiculation, and hyperpigmentation) disappeared completely within a 2–4 week period after IPL therapy. Extra benefits from IPL therapy, such as decrease of pre-treatment sun damaged signs (solar lentigines, ephelides, hyperpigmented maculae and fine wrinkles) were observed in rosacea patients. The results of treatment of the investigated 100 consecutive patients with facial erythema, telangiectasias or vascular marks due to rosacea, treated with the IPL showed the procedure to be a fast, safe, and effective modality, which increased the quality of life of rosacea patients.

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INTENSĪVI PULSĒJOŠAS GAISMAS TERAPIJAS IETEKME UZ ROSACEA PACIENTU DZĪVES KVALITĀTI

Rosacea ir hroniski noritīga iekaisīga dermatoze, kas galvenokārt raksturīga pieaugušiem pacientiem. Pētījuma mērķis bija izvērtēt intensīvi pulsējošas gaismas (*Intense Pulsed Light, IPL*) terapijas klīnisko rezultātu, pamatojoties uz pacientu aizpildītām dzīves kvalitātes novērtējuma anketām pirms un pēc terapijas *rosacea* pacientiem, kuri ārstēti ambulatorā klīnikā “Veselība un estētika” Rīgā vienu gadu ilgā periodā (2016. gadā). Visiem pacientiem bija *rosacea* raksturīgās klīniskās izpausmes, *acne* tipiskās pustulas uz telangiēktāziju fona, sejas vidusdaļas eritēma un sūdzības par sarkšanu un dedzināšanas sajūtu sejas ādā. Pētījumam tika izvēlēti 100 pacienti, kuriem gada laikā tika veikta *rosacea IPL* terapija. Katrs pacients aizpildīja dzīves kvalitātes aptaujas anketu pirms un pēc diviem *IPL* terapijas kursiem. Intervāls starp abiem *IPL* terapijas seansiem bija viens mēnesis. Tika dokumentēti visi dati par *IPL* terapijas blaknēm pacientiem. Rezultāti atspoguļo visu *rosacea* pacientu potenciālo ieguvumu no *IPL* procedūrām, jo 100% dzīves kvalitātei būtu jāuzlabojas pēc šīs terapijas. Nekādas nopietnas *IPL* terapijas blaknes netika konstatētas. Tādi blakusefekti, kā nelielas eritēmas pēc procedūras (75%), viegla tūska (10%), vezikulācija (3%), hiperpigmentācija (8%), pilnībā izzuda 2–4 nedēļu laikā pēc procedūras. Pirms terapijas uzsākšanas 8% *rosacea* pacientu tika diagnosticēti saules UV radiācijas ietekmē radušies *lentigo solaris*, vasarrabumi vai hiperhromatiskas makulas. Visiem minētajiem pacientiem pēc *IPL* terapijas konstatēta pigmentēto ādas laukumu mazināšanās: daļēji — 55%, izzušana pilnībā — 45% gadījumu pēc diviem *IPL* terapijas kursiem. Turklāt kā pozitīvi vērtējami blakni 15% pacientu atzīmēja sejas mimikas izraisīto grumbu samazināšanos. Tas uzskatāms par papildu ieguvumu *rosacea* terapijai ar *IPL*.