



TREATMENT OF UNWANTED FACIAL HAIR IN IRAQI HIRSUTE FEMALES BY INTENSE PULSED LIGHT

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ABSTRACT

Intense Pulse Light (IPL) is one of the therapeutic modalities used to treat Hirsutism, to assess the effectiveness and safety of intense pulse light in the treatment of unwanted facial hair in Iraqi hirsute females. Open therapeutic trial to assess effectiveness and safety of intense pulsed light in Iraqi females suffering from facial hirsutism. Thirty-eight patients with idiopathic hirsutism were included in the study. Treatment with IPL was done on monthly interval for 6 sessions. The intense pulse light parameters used in this study were energy density 30-40j/cm², pulse sequence (3), pulse width (8-12 ms), spot size (8×40) ml and the wavelength used was 640nm cut off 1200nm. The result showed that hair removal with IPL efficiency was significantly effective, p.value (≤ 0.00001). Side effects were mild and reversible and occurred in a minority of patients as mild perifollicular erythema. The IPL photoepilation is an effective and safe treatment for removal of unwanted facial hair. in light and dark skin phenotypes of Iraqi hirsute female

KEY WORDS: Hair removal, intense pulsed light, Hirsutism.

INTRODUCTION

Hirsutism refers to hair growth in women in areas of the body where hair growth is under androgen control and in which normally only postpubescent males have terminal hair growth. These areas include the moustache, beard, chest, escutcheon, and inner thigh.⁽¹⁾ Hirsutism caused by increased androgen levels in females from increased production of androgens (i.e. testosterone) either by the adrenals or due to an ovarian disease^(2,3), less common causes include the hyperandrogenic-insulin resistant-acanthosis nigricans syndrome (HAIRAN). About 20% of the patients may present with idiopathic hirsutism with normal androgen levels and ovarian function. There are many treatment options. Medical treatment includes Antiandrogens⁽⁴⁾. Physical treatment options include Epilation methods ranging from temporary hair removal (physical and chemical epilation) to permanent hair removal or reduction by (electroepilation⁽⁵⁾, electrolysis⁽⁶⁾, Laser/ and non laser hair removal. In Laser hair removal⁽⁷⁾; several wavelengths of laser energy have been used ranging from visible light to near-infrared radiation. These include Ruby laser, Alexandrite, Pulsed diode array and Nd-Yag laser.⁽⁸⁾ Pulsed light sources commonly referred to as intense pulsed light (IPL) are devices that emit high-intensity polychromatic light. Their output is non-coherent in nature and delivers wavelengths across a broad spectrum from 400 to 1200 nm. By placing appropriate filters over the light source, the specific wavelength of choice (dependent upon different indications) can be selected⁽⁹⁾. In the majority of pulsed light systems, the energy is delivered in a single pulse or by a fixed train of 3 or 4 pulses. The goal of laser or flash-lamp photoepilation is to produce long-term, or

permanent, cosmetically significant hair removal. The major proposed mechanism of action is “selective photothermolysis⁽¹⁰⁾” after which a long-term photoepilation may ensue, it defined as a reduction in number of hairs over an interval longer than normal hair cycle (usually 1-3 months depending on the particular given anatomic region). Long-term or potentially permanent photoepilation most likely is a consequence of light-induced interactions with the primary “bulge” and secondary matrix germinative regions of the pilosebaceous unit⁽¹¹⁾. The aim of the present work is to evaluate the effectiveness and safety of IPL in the treatment of unwanted facial hair in Iraqi hirsute females.

MATERIALS AND METHODS

Patients' data

A total of 38 female patients age range from 16-45 years with a Mean of 29 ±2.3 SD were included in this open therapeutic trial. The study was performed in Beirut center of dermatology in Baghdad in a period from 21st December 2008 to 21st September 2010. All of patients suffering from idiopathic hirsutism with unwanted facial hair were included. A written consent was taken from each patient participating in this study & the study protocol was approved by ethical committee in Al- Kindy Teaching Hospital. Full history taken and hair free period (the time taken for hair to grow after removal by whatever method) was recorded at baseline and before each treatment. Thorough clinical examination was done and the Fitzpatrick skin type was recorded, investigations as hormonal analysis of LH, FSH, free testosterone, DHES-sulfate. Digital photographs were taken by Sony corp. digital still camera DSC-T900. at baseline and before each treatment.

Treated areas were visually assessed for skin responses, including edema, erythema, hypopigmentation, hyperpigmentation, and textural changes. Any patient with the following conditions were also excluded: Pregnancy and lactation, syndrome of polycystic ovaries, grand malepilepsy, hyperandrogenemia, photosensitive disorders or the use of photosensitizing drugs, recent exposure to strong sunlight or self-tanning, or planned sun exposure following treatment. Patient on isotretinoin treatment within 6 months. The following grading was considered in our study which based on lip and chin grades of Modified F-G hirsutism scoring system.⁽¹²⁾

For upper lip:

Grade 1: A few hairs at the outer part of the upper lip.

Grade 2: Small moustache at the outer margins of the upper lip.

Grade 3: Moustache extending halfway from the outer margin of the upper lip.

Grade 4: Moustache on the entire upper lip.

For chin:

Grade 1: Few scattered hairs on the chin.

Grade 2: Scattered hair with a small concentration on the chin.

Grade 3: Light complete coverage of the chin.

Grade 4: Heavy growth on the entire chin.

Treatment method

Treatment sessions were planned to be done on monthly interval for 6 sessions. Photographs were taken and grading done at baseline and after each session.

System specification

A system product (Quanta) IPL was used with the following specification:-

Energy density 30-40J/cm², Pulse sequence 3, Pulse width 8-12, Spot size 8×40mm and the filter used was 640nm cut off from 1200nm.

Safety measures

The general IPL safety recommendations include eye protection by using protective goggles for both the patient and operator. Also avoid pointing the laser beam to the eyes.

Photoepilation protocol

Immediately before IPL treatment, hairs were trimmed to 1 mm and a 1°C cooling gel transparent to the irradiation wavelengths was applied to the surface. All patients should be advised to avoid waxing, plucking, depilatory creams, or electrolysis for at least 3 weeks prior to treatment. They may continue to shave, after the initial assessment, the patient may continue to shave throughout treatment, Patients with a history of herpes simplex should be put on oral antiviral drugs (Acyclovir) beginning the day before treatment.

Start treatment with surface exposure parameters related to Fitzpatrick skin type:

Dark skin = Fitzpatrick skin type IV & V and some of type III with overlapped with type IV.

Light skin = Fitzpatrick skin type II & III

The treatment parameters for dark skin were: pulse width (8ms), pulse delay (30 ms), fluence (30J), while those for Light skin were: pulse width (12 ms), pulse delay (24 ms), fluence (30J); then the fluence was increased with each

session as follows: 2nd one (35J), 3rd session (40J), 4th, 5th and 6th (40J).

After each session photographs were taken and assessment was done.

The grade of hair thickness and hair free period recorded and any side effect was also reported.

Postoperative Care

The treated site should be washed gently twice a day with soap and water. Any crusted areas should be treated twice daily with the application of a topical antibiotic ointment. Sunlight should always be avoided after treatment, and sunscreens should be applied daily. Patients were also instructed to avoid bathing or washing with water for 2 hours after operation. Keep the area moisturized by using any moisturizing cream, avoid the sun and use sunscreen daily and continue to avoid any possibly irritants on face for at least 7 to 10 days.

Methods for analysis of patient's data:-

The following methods for analysis are considered:-

1. The photographs of the patient were assessed at baseline and after each session by an independent dermatologist to give a grade of hair clearance according to the following grade:-Very good (hair clearance $\geq 76\%$), Good (hair clearance 51–75%), Moderate (hair clearance 26–50%), No response (hair clearance $\leq 25\%$).
2. The grade according to Modified F-G hirsutism scoring system of chin and upper lip only (0-8) were recorded at baseline and after each session.
3. Hair free period were recorded at baseline and after each session.
4. Patient satisfaction of the result after last treatment session: - patient asked to grade their satisfaction as:- dissatisfied, medium satisfaction, and good satisfaction.

Statistical analysis

Statistical analysis was done using SPSS program Version 11 and EPI6 Version 6.

For both descriptive and analytic statistics, P values of equal or less than 0.05 were considered as significant.

Assessment of treatment according to grading of chin and upper lip which had been taken from modified F-G score was analyzed and the mean of each group calculated as well as \pm SD.

RESULTS

Patients' data

All patients had black or dark hair. All patients included were with negative family history and normal menstrual cycle and normal hormonal assay. The Fitzpatrick skin types were distributed as follow:-Skin type II was one (2.63%), skin type III were eight (21.05%), skin type IV were twenty one (55.26%), Skin type V were eight (21.05%).

The response to treatment according to photographic score:

As shown in table (1) the response to treatment was assessed by photographic score and shows the following results:

Very good (equal or more than seventy six percent of hair clearance) in twenty nine patients (76.32%), good (hair clearance is fifty one to seventy five percent) in eight patients(21.05%), moderate (hair clearance: twenty six to fifty percent) in one patient (2.63%),no patient show no response (hair clearance less than twenty five percent); p.value for hair reduction as assessed by photograph was highly significant. [(Chi test=39.81); p.value≤0.00001].

Response to treatment according to lip and chin score of modified Ferriman - Gallway score:

The table (2) shows the percentage of patients in each grade at zero time, and similarly at each session . Comparison between mean and variance analysis of baseline and first session and between base line and last session and between all sessions has been done and the

difference was highly significant between baseline time and last session table(2).

Hair free period (HFP)

HFP was increasing in thirty two (84.21%) patients after the first session with no change in the other six (15.79%). After last treatment, there was no growth of hair in thirty (78.9%) patients and in 6 months follow up there is regrowth of fine hair in six (15.789%) patients, while hair free period increased in eight (21.05%) patients and it was remaining the same in 6 months follow up although it was fine hair.

Patients' satisfaction

The response to treatment was assessed by the patient's themselves is shown in table (3).

TABLE 1: The response of hirsute patients to IPL photoepilation according to photographic score:

Response depend on percentage of hair clearance	no. of patients	percentage
very good(≥76)	29	76.3
Good(51-75)	8	21.05
Moderate(26-50)	1	2.65
No response (≤25%)	0	0

Chi test =39.81, P value ≤0.0000

TABLE 2: Response to treatment according to lip and chin score taken from modified Ferriman-Gallway score:

TABLE 3: Patients' satisfaction

SESSION	Score of satisfaction									T-TEST	p.value
	G0	G1	G2	G3	G4	G5	G6	G7	G8		
0	0	0	0	1 (2.65%)	3 (7.89%)	4 (10.25%)	17 (44.92%)	6 (15.79%)	7 (18.42%)
1	0	0	3 (7.89%)	10 (25.0%)	22 (57.89%)	3 (7.89%)	5 (13.16%)	0	1 (2.63%)	51.04	<0.00001
2	0	0	14 (36.84%)	6 (15.79%)	14 (36.84%)	2 (5.263%)	2 (5.263%)	0	0	112.32	<0.00001
3	1 (7.89%)	3 (7.89%)	25 (65.789)	5 (13.16%)	3 (7.89%)	0	1 (2.65%)	0	0	277.94	<0.00001
4	7 (18.5%)	7 (18.5%)	21 (55.26%)	2 (5.263%)	0	1 (2.65%)	0	0	0	402.97	<0.00001
5	24 (36.2%)	11 (28.95%)	2 (5.263%)	0	1 (2.65%)	0	0	0	0	555.22	<0.00001
6	29 (76.35%)	8 (21.05%)	1 (2.65%)	0	0	0	0	0	0	704.94	<0.00001
					Medium	18	47.368				
					good	14	36.842				

Chi test =4.66, P value ≤.09745

Side effects

Mild perifollicular erythema which is transient and disappear after few hours in thirty (78.9%) patients, pain in two (5.263%) patients, superficial burning and post

inflammatory hyper pigmentation in two (5.263%) patients which disappear in 6 and 8 weeks, beyond margin hypertrichosis noted in two (5.263%) patients. as shown in table (4).

TABLE 4: Side effects

Side effect	No of patient	percentage
perifollicular erythema	30	78.9%
pain	2	5.263%
superficial burning and	2	5.263%
post inflammatory hyper pigmentation	2	5.263%
beyond margin hypertrichosis	2	5.263%

DISCUSSION

The concept of hair removal has recently been defined as a delay in hair growth, which usually lasts for 1 to 3 months, consistent with the induction of telogen hairs. Permanent hair reduction refers to a significant reduction in the

number of terminal hairs after a given treatment regime, which is stable for a period of time longer than the complete growth cycle of hair follicles at the given body site. Recently, it has been suggested to add 6 months to this post-treatment observation time.^(1,3) Various studies

were done previously to assess reducing hair by photoepilation (IPL) giving different success rates ranging from (30%-76%).^(14,15,13) In our study 76% hair clearance was found in 76.3% of patients which is comparable to the highest success rate of previous studies.^(14,15,13) The differences in hair clearance rate in different studies may be attributed to the variation in following parameters; body area treated, number of treatment sessions, fluence used, and follow up period.^(14,15,13) Previously conducted comparable clinical studies evaluating the efficacy of similar IPL devices for epilation on different study participants (n = 34 or n = 48, respectively) have reported a mean hair clearance 6 months after the last treatment between -33% (two treatments, total fluence: 40-42 J/cm²)⁽¹⁴⁾ and -76% (mean treatment number: 3.7, total fluence: 34-42 J/cm²)⁽¹⁵⁾ Schroeter et al⁽¹³⁾ reported treatment of 40 women with a median age 38.6 years, having hirsutism of the upper lip and chin. The hair removal was 76.7% within 6 treatments, with an average fluence of 38.7 J/cm² and a mean wavelength of 585 nm. In our study (total energy fluence: 30-40 J/cm²), we found ≥76 % of hair clearance in 76.3% of patient and 51-75% of hair clearance in 21.05% of patients after 6 treatments sessions and follow up of 6 months the p.value was significant ≤0.0001. Similarly, statistical analysis of the hair on upper lip and chin grades was performed by ANOVA and it was also highly significant. The response to treatment according to patient satisfaction showed slightly lower success rate than the response as assessed by photographic grades and the lip and chin grades taken from the Modified Ferriman-Gallway hirsutism scoring system. This can be explained by the subjective nature of the questionnaire and probably the abnormally high expectation of the patients. Side effect of IPL photoepilation previously documented was ranging from transient and mild (as erythema and pain) to moderate (pain) and or permanent (as scarring).^(13,14,15) In general, the safety of IPL photoepilation was found to be acceptable as our work revealed the safe nature of IPL photoepilation and all of the reported side effect was transient and mild. The variable fluence and pulse delay used in the photoepilation protocol according to skin types had helped much in eliminating the serious side effects. In conclusion the IPL photoepilation is relatively efficient and safe treatment for removal of unwanted facial hair. Further studies including larger number of patients and longer follow up period may help to fully evaluate the efficacy and safety of IPL photoepilation in treatment of unwanted facial hair.

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