

Efficacy and safety of intense pulse light in idiopathic hirsutism

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Abstract

Background Unwanted facial hair can cause severe cosmetic, social and psychological problems. Light assisted hair removal using lasers and intense pulsed light (IPL) sources because of their long term results and safety, have emerged as a promising method in hair removal.

Objective To determine the efficacy and safety of IPL in the treatment of idiopathic facial hirsutism.

Materials and Methods 90 cases of idiopathic hirsutism were enrolled. All were Asian females with Fitzpatrick skin type III, IV; age range was 18 to 45 years, treated at 4-6 week interval. The response of treatment was assessed after every sitting (session) by grading visual scale analogue i.e. Excellent (>80% reduction in hair density), Good (>50% reduction in hair density), Fair (>30% reduction in hair density).

Results Total 90 cases participated; participants were divided into three groups, A, B and C on the basis of completion of sessions, 10, 6 and 4 sessions respectively. 23 cases fall in group A, 31 and 36 in group B and C respectively. Mean age was 26.34±6.39. Excellent response seen in 69.5% cases in Group A, 16.1% cases in group B, while 16.6% cases in group C, with minimum complications, which was statistically significant $p=0.000$. There was no significant difference between age groups in response to IPL ($p=0.66$), also not statistically difference between marital status and response of IPL ($p=0.99$).

Conclusion Intense pulsed light is a good treatment option in idiopathic hirsutism, without any major side effects.

Key words

Intense pulsed light, idiopathic hirsutism.

Introduction

Hirsutism is defined as excessive terminal hair growth in a female in male pattern distribution. Perception of hirsutism is by definition subjective, and women present with a wide variation in severity.¹ Hirsutism affects 5–10% of women, depending on the definition and ethnicity.² Hirsutism is an embarrassing

condition that threatens both a woman's perception of her femininity and her self-esteem.³ Underlying causes of hirsutism may be congenital adrenal hyperplasia, polycystic ovary syndrome, ovarian and adrenal tumors, pharmacological agents, familial or it may be idiopathic.⁴

Such male-pattern growth of terminal body hair usually occurs in androgen-sensitive locations, such as upper lip, chin, chest, areola, abdomen, back and femoral region.⁶ On the other hand, hypertrichosis is independent of androgen influence and is manifested, particularly by the

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superfluous and uniform growth of non-terminal (vellus) hairs over the body particularly in non-sexual areas. Many temporary hair removal methods exist including shaving, tweezing, waxing, chemical depilatories and electrolysis.⁷ The need for a rapid, non-invasive method has led to the development of various light sources.

Laser hair reduction (LHR) has emerged as a popular cosmetic dermatology procedure. Several types of lasers are available for hair removal along with non-laser intense pulsed light (IPL) epilators. However, optimizing these devices according to the skin and hair type of the patient to be effective yet safe is a difficult task. Lasers emitting light in the wavelength range of 600–1100 nm can effectively target the melanin in the entire portion of hair follicles.⁸ Different laser systems and intense-pulsed light currently approved by the Food and Drug Administration, USA, for the reduction of hair are ruby (694 nm), alexandrite (755 nm), diode (800 nm) and long pulse Nd: YAG (1064 nm) laser and IPL (515–1200 nm) sources.⁹ LHR is a slow process which takes at least six to eight sittings and spacing between the sessions is done depending on the hair cycle of that area. The apparent cosmetic improvement may be related to reduction in number of hairs or a decrease in diameter or pigmentation. Tracking of these parameters over such long periods is tedious. The purpose of this study was to evaluate the safety and effectiveness of IPL-808 in the treatment of idiopathic hirsutism.

Patients and Methods

Experimental non-randomized non-controlled study was conducted at Department of Dermatology, Shaheed Mohtarma Benazir Bhutto Medical University, Larkana from December 2017 to October 2018. A total of 90 patients of idiopathic hirsutism were enrolled, all were Asian females with Fitzpatrick skin type

III, IV, age range was 18 to 45 years. A proforma was set that shows fluence, frequency, total sittings of patient and response of IPL after each sitting. The starting fluence was determined while pulse duration was kept constant. The result of treatment was assessed after every session by grading visual scale analogue i.e. Excellent (>80% reduction in hair density), Good (>50% reduction in hair density), Fair (>30% reduction in hair density) (**Table1**). To diagnose any hormonal abnormality, relevant hormonal assays were done. Patients with underlying hormonal disturbance, polycystic ovary disease, pregnancy, or taking hormonal therapy and women with white hairs, having risk of keloids and hypertrophic scars were excluded. Written informed consent was taken and photographs were taken before and after each sitting of laser. Previous modalities used on the sites for hair removal were discontinued. Immediately before IPL treatment, patient was asked to wash the area with soap and water. Cooling transparent gel was applied to the surface area under treatment. Area was marked with pencil to avoid any overlapping of laser pulses or any skipped areas. Furthermore, metallic jewelry was removed during the procedure. Patient's eyes were covered with metallic shields and protective eye goggles were worn by doctors performing the laser. Patients were given ice pack to cool the area. They were advised to use sun block and to avoid heat and sun light after treatment. Patients were examined for any immediate side effects e.g. erythema, edema, blistering, necrosis, folliculitis and for late side effects e.g. hypopigmentation, hyperpigmentation, paradoxical hypertrichosis and scarring etc.

Table 1 Visual scale analogue

Grading	Percentage Improvement
Excellent	>80% hair density reduction
Good	>50% hair density reduction
Fair	>30% hair density reduction

In case of transient erythema, mild topical steroid was advised.

Results

Total 90 patients participated; participants were divided into three groups, A, B and C on the basis of completion of sessions, 10, 6 and 4 sessions respectively. 23 cases fell in group A, 31 and 36 in group B and C respectively. All were Asian females with mean age 26.34 ± 6.39 , among them married were 34.4% and unmarried 65.5%. Excellent response seen in 16 (69.5%) cases, out of 23 (25.5%) cases in Group A (completed 10 sessions), 5 (16.1%) cases out of 31 (34.4%) in group B (completed 6 sessions), while 6 (16.6%) cases out of 36 (40%) cases in group C (completed 4 sessions). Good response was seen in 3 (13.3%) cases, out of 23 (25.5%) cases in Group A (completed 10 sessions), 20 (64.5%) cases out of 31 (34.4%) in group B (completed 6 sessions), while 10 (27.7%) cases out of 36 (40%) cases in group C (completed 4 sessions) Fair response seen in 4 (17.3%) cases, out of 23 (25.5%) cases in Group A (completed 10 sessions), 6 (19.3%) cases out of 31 (34.4%) in group B (completed 6 sessions), while 20 (55.5%) cases out of 36 (40%) cases in group C (completed 4 sessions) (**Table 2**), which was statistically significant $p=0.000$. Superficial burning was observed in 13.3%, transient erythema in 3.3%, folliculitis in 3% (**Table 3**). There was no significant difference between age groups in response of IPL ($p=0.66$), also not statistically difference between marital status and response of IPL ($p=0.99$) (**Table 4**). **Figure 1 (A & B)** before treatment and **Figure 2 (C & D)** shows the response in a patient after 10 treatment sessions.

Table 2 Number of visits - Response of IPL

Number of visits	Response of IPL			Total
	Excellent	Good	Fair	
4 visits	6	10	20	36
6 visits	5	20	6	31
10 visits	16	3	4	23
Total	27	33	30	90

Table 3

Adverse Effects	Percentage
Transient Erythema	3.3%
Folliculitis	3.3%
Superficial Burning	13.3%

Table 4 Marital status of participant - Response of IPL

Marital status	Response of IPL			
	Excellent	Good	Fair	Total
Married	10	10	11	31
Unmarried	17	23	19	59
Total	27	33	30	90

Discussion

Hirsutism is an embarrassing condition that threatens both a woman's perception of her femininity and her self-esteem. Successful hair removal with this light source has previously been reported in many studies. A preliminary study by Weir and Woo¹⁰ demonstrated 42% and 37% reduction of hair density using a single treatment in patients with skin types IV and V respectively, with an average fluence of 37 J/cm². Gold et al.¹¹ performed a single-exposure study, with an IPL system. After 12 weeks, a 60% reduction in hair density was noted. Fluence ranged from 34 to 55 J/cm². Another study¹² reported a 75% reduction 12 months after a single treatment in 24 patients with skin types I to VI.

In our study, a hair density reduction of >80% was achieved in 69.5% patients in group A those who have completed their ten treatment sessions with mean fluence of 7.1J/cm². Amin and Goldberg¹⁴ reported >50% reduction in all patients after six sessions using IPL and minimal



Figure 1 (A & B). Before treatment



Figure 2 (C & D). After 10 treatment sessions

adverse effects were noted. However, also in our study >50% results found in 64.5% in group B who have completed six sessions, the p-value is 0.000 which is statically very significant.

We found that there was no significant difference between married and unmarried in the response of IPL and there was no significant difference between the age groups in the response of IPL. As regards the side effect profile, our patients tolerated the treatment very well. This give us confidence in recommending

the use of IPL in idiopathic hirsutism where the facility is available.

Conclusion

In conclusion, our data document that IPL is safe and effective in reduction of hair density and should be treatment of choice in a developing country like ours.

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