



INTENSE PULSED LIGHT AS MONOTHERAPY IN THE MANAGEMENT OF ACNE

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ABSTRACT

Acne vulgaris commonly affects adolescents and adults causing disfigurement or scarring having psychological impact and reduces quality of life. This study conducted to study impact of Intense Pulsed Light (IPL) over the lesion. An interventional study carried out over 81 (M: F - 37:44) acne patients attending dermatology OPD, 3 setting of Intense Pulsed Light (IPL) therapy (430 -1200 nm wavelength) were given to patients. Mean age of 81 acne patient was 23.56 + 4.47 years and most of patients were having papular type of acne (81%) followed by pustules (71%) & comedones (45%). There was significant decrease (p<0.05) in average lesion count in third setting (23.44 + 15.6) as compared to first setting (36.65 + 18.2). Erythema (16.05%) followed by Itching (6.17%) and burning (3.70%) were most common side effect of therapy. IPL is safe, short duration and non-invasive method for inflammatory acne lesions with good compliance from patient.

KEYWORDS : Acne vulgaris, Intense Pulsed Light (IPL)

INTRODUCTION

Acne vulgaris is an exceedingly common chronic disease of the pilosebaceous unit, affecting approximately 40 million adolescents and 25 million adults.¹ Additionally to the potential for long-term scarring and disfigurement, acne vulgaris carries a significant psychosocial morbidity including social withdrawal, clinical depressive disorder, and suicide.^{2,3} Acne is conventionally treated with topical and oral medications such as antibiotics and retinoids. While these therapies provide adequate control for several patients, they often have drawbacks involving side effect profile, length of medical treatment and patient compliance.^{4,5}

Acne is most common dermatological condition causes visits to specialist, in adolescence related with stigma causes psychological and social distress with perception of ill health.^{7,8} Acne having multifactorial and complicated pathogenesis, mainly includes increased sebum secretion, hyper cornification, microbial infection and inflammation.⁹ Treatment for acne mainly targets factors contributing to pathogenesis of acne, dermatologists now a days use chemical peeling and laser therapies to overcome the antibiotic resistance. Light based therapies act rapidly and having better patient compliance.¹⁰ This study was conducted to determine the role of Intense Pulsed Light in the treatment of all grades of acne.

MATERIAL & METHODS:

An interventional study was conducted in Department of Dermatology in a tertiary care hospital from October 2018 to June 2020 following approval form ethical committee of the institute. All the patients attending OPD who full fill the eligible criteria were included in study after taking written informed consent. Patient was advised to discontinue topical retinoids at least 2 weeks before first intense pulsed light session and also throughout the study. All patients were advised to regularly apply oil free sunscreen (SPF 30) till the completion of the study.

Inclusion Criteria:

1. At least 5 lesions of acne on every side of face.
2. Age between 18 to 35 years.

Exclusion Criteria:

1. Use of oral retinoids prior to the study.
2. History of keloid, vitiligo, consumption of drugs that

exacerbate or remit acne.

3. History of skin cancer, photosensitivity disorders.
4. History of poor wound healing such as diabetes mellitus
5. Pregnant /lactating women.

Intense Pulsed Light (ipl) Procedure:

- Before every intense pulsed light session, a patient was requested to wash their face with soap and water.
- All treatments were performed using VENUS intense pulsed light machine with the ensuing parameters:
 1. 430 -1200 nm wavelength
 2. 15 mm × 50 mm spot size
- Two passes were given with energy of 16-20J.
- Each patient received 3 intense pulsed light sessions with intermittent duration of 7 days.
- Immediate cooling was done after the procedure with ice pack.
- All patients were advised to regularly apply oil free sunscreen (SPF 30) till the completion of the study.
- The score was calculated by a non-treating dermatologist by Juhlin and Vahlquist system.

Type of lesion	score
Comedones	0.5
Papules	1
Pustules	2
Infiltrate	3
Cyst	4

- Multiplying the number of each type of lesion by its severity index and adding each product, a total score was obtained that represented the severity of the disease for each visit.
- The quantitative data was represented as their mean ± SD. Categorical and nominal data was expressed in percentage. All analysis was carried out by using SPSS software version 21.

Before And After Photographs.





RESULTS:

Mean age of 81 (Male - 37, Female - 44) acne patient was 23.56 ± 4.47 years and most of patients were from less than 25 years of age (67.9%). Papular type of acne was present in 81% of subjects followed by pustules (71%), comedones (45%) and nodules (31%). (Table 1)

Table 1: Type Of Acne

Type	n	%
Comedones	36	45
Papules	66	81
Pustules	58	71
Nodules	25	31

There was significant decrease (p<0.05) in average lesion count in third setting (23.44 ± 15.6) as compared to first setting (36.65 ± 18.2), while no significant difference (p=0.09) was observed after second setting (31.78 ± 17.9).

The most common side effects of intense pulsed light were erythema (16.05%) followed by Itching (6.17%) and burning (3.70%). (Table 2) There was significant decrease in mean Michaelson (Juhlin and Vahlquist) value at 3 weeks (12.67 ± 3.8) as compared to week 0 (48.51 ± 13.9). (p = 0.001) Most of the study population had Good and excellent grade (75%) reduction of lesion count followed by Moderate grade (12%) mild grade (6%), While no improvement was seen in (4%) and worsening was occurred in (2%).

Table 2: Side Effect Of Intense Pulse Light Therapy

Side effects	n	%
Erythema	13	16.05
Itching	5	6.17
Burning	3	3.70

DISCUSSION:

Acne occurs due to blockage of drain hole, there is inflammatory response to sebum and growth of P acne. IPL used in many dermatological conditions including acne. IPL covers a large wavelength to be absorbed by the desired chromophore, as it directs a specific light beam to the target, through the use of cutting filters, exposure time of the light pulses and interval between them.¹¹ In acne vulgaris, the desired chromophores are the porphyrins produced by P acne. These porphyrins absorb blue light at wave length 390 nm produced by IPL.¹²

In the present study, 21 to 30 years (67.3%) was the most common age group affected with acne followed by 31 to 40 years (23.1%). Similarly in the study by M R Swaroop et al, majority of patients (76.7%) from 18-25 years of age group.¹³ There was female predominance (54.7%) amongst study population as compared to male (45.3%). This finding was comparable with the study by Priya Cinna T Durai et al. in which majority (60.7%) of study population were females as in other studies,¹⁴⁻¹⁶ which may be because females are more conscious of their appearance than the males. It might be due to change in surface lipid composition, hydration or molecular structure of keratins and prostaglandins affected by vasoactive properties during premenstrual phase.

In the present study, papules (81%) were the most common type of acne amongst study population followed by pustules (71%), comedones (45%) and nodules (31%). On the contrary

Priya Cinna T Durai et al. comedones (133, 95%) were the most common then papules (82, 58.6%) and pustules 20, 14.3%.¹³

There was significant decrease in average lesion count in third sitting as compared to first sitting while no significant difference was observed at second sitting. These findings were comparable with the study conducted by Khan WZ et al wherein mean lesion count of total lesions decreased to 7.48 ± 3.34 of their pretreatment value (14.49 ± 2.93) after final treatment session which was statistically significant (p=.0001).¹⁷

In the present study, the most common side effects of intense pulsed light were erythema (16.05%) followed by itching (6.17%) and burning (3.70%). However, in study done by Kawana S et al¹⁸ 20 out of 25 patients, 20 patients experienced immediate erythema; 19 of them reported burning or stinging while Patidar MV et al reported itching in forty patients, erythema in 2 patients, burning sensation in 3 patients and 2 patients developed milia.¹⁹

In the present study, there was significant decrease in mean Michaelson (Juhlin and Vahlquist) value at 6 weeks as compared to week 0. This finding was comparable with the study by M R Swaroop et al, Mean Michaelson's acne severity index at baseline (0 week) was 50.83 and at the end of six treatment sessions was 10.20. The improvement in acne severity score was found to be statistically significant (p=.0001).¹³ In a similar study done by Kumaresan M et al 13 the mean total acne severity score at the baseline was 49.4 and at the end of four treatment sessions was 25.1 and percentage reduction in acne severity score showed 49.19% reduction from baseline.²⁰

In the present study, most of the study population had good and excellent grade (79%) reduction of lesion count followed by moderate (14%) and mild grade (7%). These findings were comparable with the study by M R Swaroop et al, in which at the end of six treatment sessions (week 6), 27 patients (90%) had excellent inflammatory lesion clearance (>75%), 3 patients (10.0%) had good inflammatory lesion clearance (51-75%).¹³ In a similar study conducted by Mohanan S et al; 19 out of 8 patients, two patients had excellent inflammatory acne clearance (> 75%) and five patients had good acne clearance (51%-75%) at the end of five treatment sessions of IPL.²¹

CONCLUSION:

IPL is effective for inflammatory acne lesions it has advantage over conventional method. IPL has an advantage of decreasing duration of treatment as it last for 3 weeks and each sitting takes up maximum half an hour of the patients. It has good compliance from patient, non-invasive and makes recovery is faster.

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