

## Evaluation of Efficacy and Safety of Intensive pulse Light (IPL) In Treatment of Hirsutism in Irsutism in Iraqi women with Some Epidemiological Data

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### Abstract

**Background:** Hirsutism is the presence or an excess of terminal (thick and dark) hair growth in women, in a male - like pattern. Hirsutism affects about 5-10% of women during reproductive age. Many therapeutic measures are used in the treatment of hirsutism, which include, drugs therapy and cosmetic measures and this involved self-care methods and laser therapy, of which intensive pulse light is one of useful therapeutic method.

**Objective:** To evaluate the efficacy and safety of intensive pulse light in the treatment of hirsutism with some epidemiological data in Iraqi women.

**Patients and Methods:** A cohort study in which, one hundred and forty seven women with hirsutism of the face (moustache and chin) were seen and evaluated in a laser clinic of Baquba Teaching Hospital, during the period from January 2010 to June 2013, with a mean age of (29.76±9) years . They were examined and evaluated for the grad of hirsutism, type of skin, menstrual cycle, marital status, childbearing, hormonal and steroid therapy and family history of hirsutism. The diagnosis of cause of hirsutism was made by clinical criteria and certain investigations according to the need. They were treated by intensive pulse light (IPL) and anti-hormonal drugs on need, according to the type of skin and severity of the hirsutism and followed up for six months after the end of therapy , the response was graded into four grades, excellent, good , moderate and poor

**Results:** The study revealed that (42.85%) shows an excellent response, (42.17%) with good response, (14.28%) with moderate response and (7.48%) shows a poor response. Severe complications of therapy like blister and hyperpigmentation were rarely seen. The study shows that the idiopathic hirsutism was the common cause of hirsutism of the face (moustache and chin) in women (66.66%), then the polycystic ovary syndrome (24.49%) and hyperprolactenemia (8.85%).

**Conclusion:** We concluded that intensive pulse light was an effective and safe method in treatment of hirsutism in women, whatever the cause and the idiopathic hirsutism was the common cause.

**Key words:** Safety, hirsutism, polycystic ovary syndrome, hyperprolactenemia, laser, intensive pulse light.

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## Introduction

Hirsutism is the presence or an excess of terminal (thick , dark ) hair growth in women in a male - like pattern, which means in areas of the body where hair growth is under androgen control and in which normally only post pubescent males have terminal hair growth, which include the moustache, beard, chest, escutcheon and inner thigh [1] . This altered growth pattern of hair may be associated with other signs of virilization, which include fronto-temporal balding, masculinizing signs, deepening of the voice, clitoral hypertrophy, amenorrhea and sometime acne [2]. Both the severity of hirsutism and the degree of its acceptance are dependent on racial, cultural and social factors [2, 3].

The scheme employed in the study by Ferriman and Gallwey, which has become the standard grading system, defined hirsutism purely on quantitative grounds , in which hirsutism is graded as numerical scores beyond an upper limit of twice the standard deviation from the mean . Scoring can be on a global basis assessing 8-11 body sites, or it can be based on a single site [1, 2, 4, 5, 6].

There are many causes of hirsutism which include, first one, increased androgen level in women from ovarian, adrenal, hyperandrogenic-insulin resistance, hyperprolactinemia and androgenic drugs, including polycystic ovary syndrome (POS 70%) [7,8]. Second cause idiopathic hirsutism (IH), include patients with normal ovulatory functions and circulatory androgen levels, account about 20% of patients with hirsutism. The cause of increased hair in these women is thought to be related to disorders in peripheral androgen activity, with increased sensitivity of the pilosebaceous unite to normal plasma levels of androgen, occurs shortly after puberty, with slow progression and respond well to

antiandrogen or 5alpha-reductase inhibitors [2, 9]. And third cause is premenopausal hirsutism. A rare form occurs in some premenopausal women and continue for a few years after menopause, which is due to decrease in ovarian estrogen secretion with continuous androgen production [10].

Determine age of onset, severity and rate of progression, hirsutism that begin at puberty may be caused by polycystic ovary syndrome or hyperthecosis, idiopathic hirsutism ,or late onset adrenal hyperplasia. Sudden onset of hirsutism suggest an iatrogenic cause (drugs, etc.), or if associated with virilization, a tumor of the ovary or adrenal gland , the presence of acanthosis nigricance suggest the diagnosis of HAIR.AN syndrome in association with PCOS or hyperthecosis . Fertile women with normal menses and a long history of relatively mild hirsutism, not need investigation [1, 2]. The following tests can be undertaken to find the cause: Serum testosterone, dehydroepiandrosteroe sulfate (DHEAS), serum 17-hydroxy progesterone, twenty four hours urine free cortisol, luteinizing hormone (LH), follicular stimulating hormone (FSH) (LH:FSH>3), prolactin and serum thyroid stimulating hormone (TSH), pelvic ultrasonography, magnetic resonance imaging (MRI) or computed tomography (CT) of the adrenal region (2,9). Polycystic ovary syndrome (PCOS70%) and idiopathic hirsutism (IH20%) account about 90% of all clinically diagnosed cases of hirsutism [2, 11].

The choice of method of treatment depends on patient preference, adverse effects, the degree of hirsutism, the level of hirsutism, previous treatment and cost which include [2,6,9,12,13]. Cosmetic measure, like self-car methods and clinic-based methods which consist of [A. Self-car methods, which offer only temporary reduction of excess hair, which include:

Plucking, shaving, waxing, chemical depilatories and bleaching;

Clinic-based methods, first one is electrolysis, often result in a permanent reduction in hair growth, second one is laser treatment (light amplification by stimulation of emission of radiation), uses light of certain wavelengths to result in complete or persistent hair removal, it is more effective than shaving, waxing and electrolysis, producing partial hairs reduction for up to 6 months, the effect is enhanced with multiple treatment and the number of treatment required depends on the laser type and on the nature of the patient's hair follicles. Laser systems for hairs removal are of various wavelengths and also include intense pulsed light systems (IPL). The choice of system depends on the patient's skin type and hair's color. Women with fair skin and dark hair are ideal candidates. Adverse effects of laser hair removal include, pain, erythema, burns, dyspigmentation and scarring. Laser treatment has also been known to cause a paradoxical increase in hair growth and finally drugs therapy [4, 8, 11].

The aim of the present study is to evaluate the efficacy and safety of intensive pulse light (IPL) in treatment of hirsutism with some epidemiological data in Iraqi women.

## Materials and Methods

A cohort study in which , one hundred and forty seven women with hirsutism of the face (moustache and chin) were seen and evaluated in a laser clinic of Baquba Teaching Hospital , during the period from first of January 2010 to thirty of June 2013 . Their ages ranged from (16-52 years) with a mean age of (29.76±9years). They were examined and assessed and special quisonnaires were used for every patient, for the grading of hirsutism, type of skin (type 2-4), menstrual cycle, marriage, child bearing,

body weight , hormonal and steroid therapy and family history of hirsutism.

Investigations including hormonal assay (LH, FSH, TSH, testosterone and prolactin) and abdominal ultrasound were done to diagnose the cause of hirsutism on need. The grading of hirsutism was done according to Ferriman - Galawey scores (four grads were done G1, G2, G3 and G4) [6].

They were treated by intensive pulse light (IPL, Korean, ATM Company), with pulse duration of (5-10ms), with influence of (5-30 joule/square cm), (2-3) pulse, with pulse delayed of (25-50ms). Much secession was required (4-10) and the interval between each secession and the other was (3-6 weeks). Also patients with hormonal abnormalities were treated according to the type of abnormality and the side effects of IPL therapy were recorded. The response to therapy was assessed by investigator through improvement in grads of hirsutism and graded to four degree: excellent, good, moderate and poor response according to the grad of hirsutism (i.e. decrease in density and thickness of hair) and followed up for (6 months) after the last secession.

## Statistical analysis

All data were analyzed by using computer, using Chi square and the results were considered significant, when the P-value <0.05.

## Results

The study revealed that the idiopathic hirsutism (IH) was the common cause of hirsutism of the face (moustache and chin) (66.66%), then polycystic ovary syndrome (PCOS) (24.49%) and the hyperprolactenemia (8.85%), with a mean age of (29.76±9 years) (Table-1).

**Table-1:** Distribution of patients in relation to age, cause and grade of hirsutism .

Cause	Number	%	Mean age years SD	Grads before therapy							
				G1	%	G2	%	G3	%	G4	%
PCOS	36	24.49	27.25±11	0	0	3	8.33	23	63.88	10	27.77
IH	98	66.66	32.57±8	3	3.06	31	31.63	51	52.04	13	13.26
Hyperprolactinemia	13	8.85	29.46±10	0	0	1	7.69	11	84.61	1	7.69
Other causes	0	0	0	0	0	0	0	0	0	0	0
Total	147	100	29.76±9	3	2.04	35	23.12	85	57.82	24	16.32

The response to intensive pulse light (IPL) therapy as assessed by investigator was expressed in (Table-2) , in which, women of idiopathic hirsutism (66.66%) with a mean age of (32.57±8 years) and their grading before treatment was (3,06%) in G1, (31.63%) in G2, (52.04%) in G3 and (13.26%) in G4 and after treatment (40.81%) in G1, (10.20%) in G2, (8.16%) in G3 and none in G4, so (40.81%) shows complete clearance of hirsutism ( i.e. with excellent response), also there was a significant increase in number of women in G1 {good response, (3.06%) before and (40.81%)} after therapy, while there was a significant decrease in number of women in G2

((moderate response) and G3 (poor response) and none in G4 , with P<0.05 (Table-2 and Figure-1, 2).

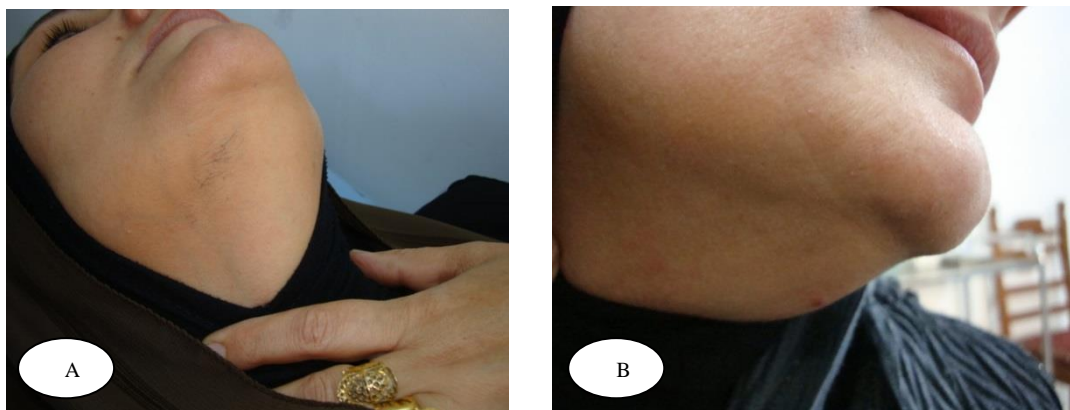
Women with polycystic ovary syndrome (24.49%) with a mean age of (27.25±11 years), before treatment {none of them in G1 (8.33%) in G2 (63.88%) in G3 and (27.77%) in G4 and after treatment with IPL and antihormonal therapy (55.55%) in G1 (good response) (27.77%) in G2 (moderate response) (8.33%) in G3 (poor response) and none in G4 and (8.33%) shows complete clearance of hirsutism (excellent response), P<0.05 (Table-2 and Figure-3,4) .

**Table (2):** Response to therapy by intensive pulse light (IPL).

Cause	No	Grads after therapy								Complete clearance (excellent response)
		G1 Good	%	G2 Moderate	%	G3 Poor	%	G4No Response	%	
PCOS	36	20	55.55	10	27.77	3	8.33	0	0	3/8.33%
IH	98	40	40.81	10	10.20	8	8.16	0	0	40/40.81%
Hyperprolactinemia	13	2	15.38	1	7.69	0	0	0	0	10/76.92%
Total	147	62	42.17	21	14.28	11	7.48	0	0	53/42.85%

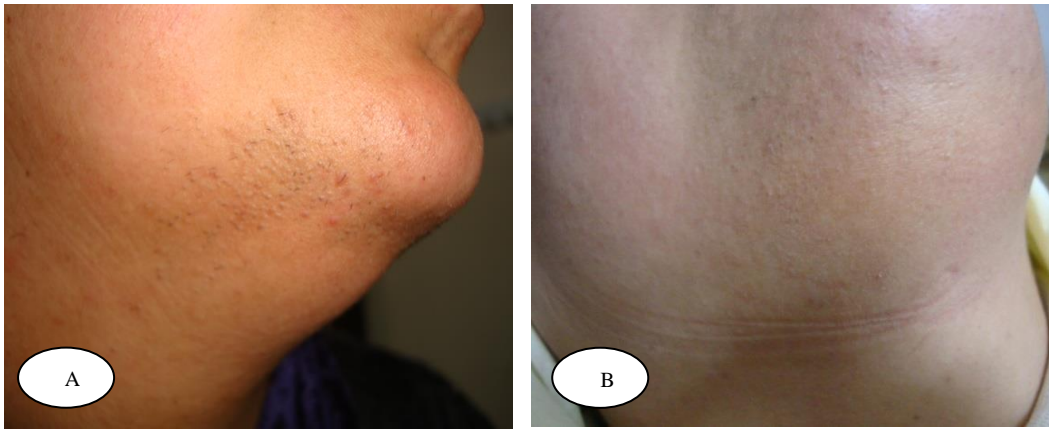
PCOS (Polycystic ovary syndrome).

IH (Idiopathic hirsutisim).

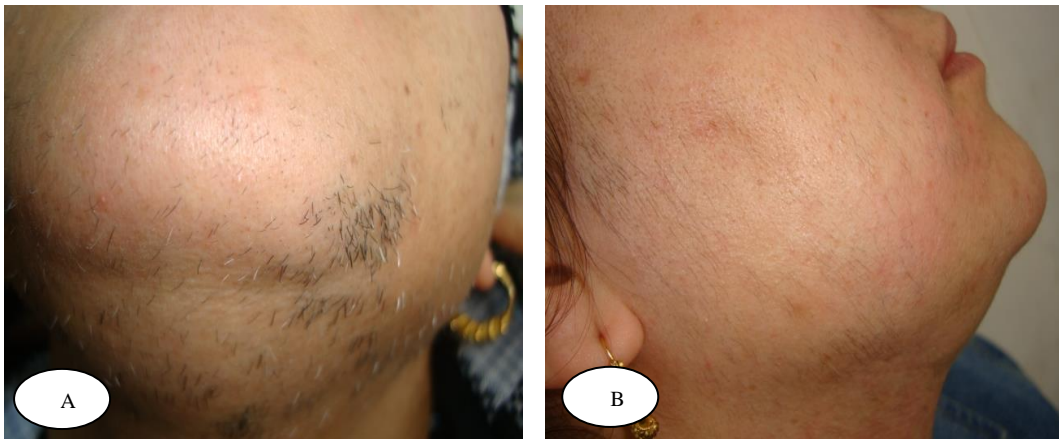


**Figure (1):** A- Idiopathic hirsutism before treatment, B- After 4 secessions of treatment.

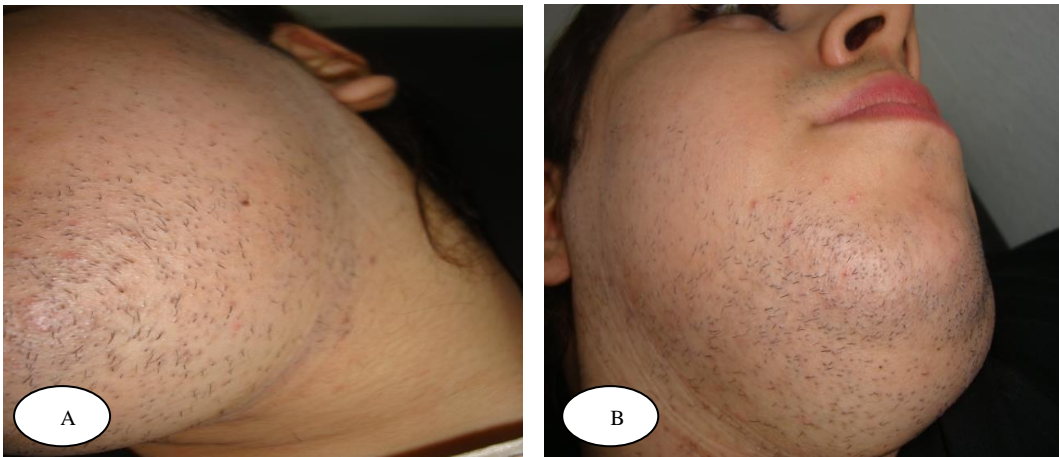




**Figure (2):** A- Idiopathic hirsutism before treatment, B- After 5secessions of treatment.



**Figure (3):** A- Polycystic ovary syndrome hirsutism before treatment, B- After 8 secessions of treatment.



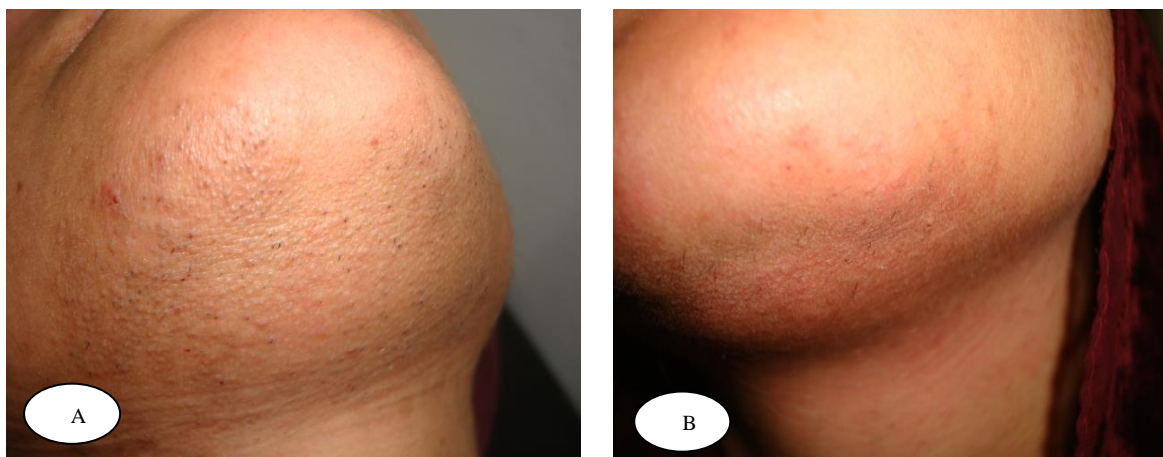
**Figure 4:** A, B-Polysystic ovary syndrome hirsutism before treatment, C,D- After 10 secessions of treatment.

Those women with hyperprolactenemia (8.85%), with a mean age of (29.46±10years), before treatment, none in G1 , (7.69%) in G2, (84.61%) in G3 and (7.69%) in G4 and after IPL treatment with bromocriptine tablet 2.5mg/day for three months, (15.38%) in G1 (good response), (7.69%) in G2 (moderate response), none in G3 and G4 and (76.92%) shows complete clearance of hirsutism (excellent response) (Table-2 and Figure-5,6).

From the total number of women with hirsutism (147), {(53 )women (42.85%) shows complete clearance of hirsutism (excellent response), (42.17%) good response, (14.28%) moderate response and (7.48%) shows poor response}, after (4-10) secessions of IPL therapy, i.e. about

(42.85%) shows complete clearance of hirsutism and (56.45%) of women shows marked improvement in hirsutism with (P<0.05) (Table-2) .

Regarding the complications of IPL therapy, (50) women (34.01%) developed erythema and burning sensation, (5) women (3.4%) developed blisters and then crastation and (10) women (6.9%) developed hyperpigmentation. These complications developed anywhere during therapy. Erythema and burning sensation disappeared with in (1-3) hours of therapy, blisters and crastaion also cured completely with in (7-10) days and those with hyperpigmentaion also resolute within (2-3) months after therapy.



**Figure (5):** A- Hyperprolactenemia with hirsutism befor treatment, B- After 6 secessions of treatment.



**Figure (6):** A- Hyperprolactenemia with hirsutism before treatment, B- After 7 secessions of treatment.

## Discussion

The study shows that the idiopathic hirsutism was the common cause of hirsutism (66.66%), then the polycystic ovary syndrome (PCOS) (24.49%), which was different from those reported in other countries of the world, in which PCOS was the common cause of hirsutism, which represent about (70%), this may be due to racial difference in the prevalence of causes of hirsutism [1,2].

In this study (42.85%) of women shows complete clearance of hirsutism of the face (excellent response) and (56.45%) shows significant improvement (total was 97.35%), which was comparable with study done in Sina Hospital, Tabriz, Iran in 2009, with (86.42%) of good improvement by IPL therapy [14]. Also the study was concordant with that done in Mayo Hospital, Lahore, Pakistan in 2009, in which (44%) of patients with idiopathic hirsutism treated by IPL shows an excellent response. This concordance between the results, may be due to the situation of the three countries in the middle east area and of close racial and ethnic relation and so the response to IPL therapy [15].

In comparesim of the result of this study with other studies, in which different types of laser was used in treatment of hirsutism, including: long-pulse (1064nm) Nd: YAG laser and in different centers (France, Spain), with 46% reduction in hair density in both centers and long-pulse Q-switched Nd:YAG laser, with a (59%) and (66%) reduction in hair count, which were incomparable with this study, this may be due to the racial difference in type of skin and color of the hair and as a result the response to therapy as well as the type of laser used [16, 17, 18]. The use of other laser, like normal-mode ruby laser in Leeds, England, which give (39%) improvement in hirsutism, i.e. low response in comparesim with this study, this

may be due to similar causes as in other European countries i.e. racial difference and type of laser used (19). The complications seen in this study was similar to other studies, mild, limited and clear spontaneously.

In conclusion, the study shows that intensive pulse light (IPL) was an effective and safe therapy in different types of hirsutism and the idiopathic hirsutism was the common cause of hirsutism

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