Hair Removal by Using Intensity Pulsed Light (IPL) and Electrolysis Methods
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Abstract
The study was performed in specialist of dermatitis Dr. Fatin Fadhil in Hilla and lasted for one year. The aim of this research is to study (30) cases of ladies with age between (20-40) years suffered from severe growing of hairs on their faces and other places of body. Patients have been classified into two groups, first one includes (20) patients suffered from disorder in hormone Prolactin in different scales, after get the cure, they were exposed to IPL device of high power light (25-40) µw and wave length of (640-1200) nm, for (6-8) sessions the session period was between (10-15) minutes.

We conclude from the study that the efficiency of IPL device in removing black hair only by high rates 100% for first group A due it's direct effect on melanin pigment and absorbed by, in addition of disarrangement in hormone level. Second group includes (10) cases was treated by thermal device Electrolysis device and proved high activity in removing black and white hair but for longer period than IPL without depending upon hormone levels in body.

Introduction
The efficacy of laser hair removal is now generally accepted in the dermatology community, and laser hair removal is widely accepted. Many reviews of laser hair removal methods safety and efficacy have been published in the dermatology literature. (Eremia, S., et al., 2001).

Intense pulsed light (IPL), is a technology aimed at producing light of high intensity during a very short period of time. It involves specific lamps together with capacitors whose rapid discharge provides high energy required.

Epilation by laser was performed experimentally for about 20 years before it became commercially available in mid of 1990s. Intense Pulsed Light (IPL) epilators, though technically not a laser, use xenon flash lamps that emit full spectrum light. Laser and light –based method, sometimes called phototricholysis or photo epilation, are now most commonly referred to collectively as "laser hair removal". One of the first published articles describing laser hair removal was authored by the group at Massachusetts General Hospital in 1998. (Liew, 2002) (Dierickx, et al., 1998).
The primary principle behind laser hair removal is Selective Photothermolysis (SPTL). (Wanner, 2005). Laser can cause localized damage by selectively heating dark target matter, (melanin), in the area that causes hair growth, (the follicle), while not heating the rest of the skin – light is absorbed by dark objects, so laser energy can be absorbed by dark material in the skin (but with much more speed and intensity pulse width is an important consideration it has been observed in some published studies that longer pulse width may be safer for darker skin. Shorter wave lengths may be more effective in removing hair. (MC Daniel, et al., 1999).

Spot size, or the width of the laser beam, affects treatment. Theoretically, the width of the ideal beam is about four times as wide as the target is deep. Hair removal lasers have around spot about the size of your finger (8-18) mm. larger spot sizes help make treatment faster and more effective. (Warner, and Gutawski, 2006).

Electrolysis is another hair removal method that has been used for over 135 years. At this time, it is the only permanent option, for very fine and light – colored hair. The FDA currently allows the term "Permanent Hair Removal" for electrolysis only, unlike laser epilation. (Alex iades – Armenakas, 2006).

The practitioner selects a metal probe that slides easily into the hair follicle, usually the same diameter as the hair shaft or smaller. This is typically 50 to 150 µm (0.002 to 0.006 inches) for all three modalities.

Patients and Method

I'd like to present many thanks to Dr. Fatin Fadhil for her support and facilitate by a good hospitality in her own dermatitis clinic to take information for more than female patients suffers from severe growing of white and black hairs on their faces, their ages between (20-40) years. After analyze lab results of hormone Prolactin before expose to IPL and Electrolysis. Patients have been classified into two groups, first one includes (20) patients suffered from disorder in hormone Prolactin in different scales, after get the cure, they were exposed to IPL device of high power light (25-40) µw and wave length of (640-1200) nm, for (6-8) sessions the session period was between (10-15) minutes. It's been noticed that melanin pigments clearly for special wave length of (IPL) device.

Melanin is considered the primary chromophore for all hair removal currently on the market. Melanin occurs naturally in the skin, (It gives the skin and hair its color). There are two types of melanin in hair: Eumelanin (which gives hair brown or black color) and Pheomelanin (which gives hair blonde or red color). (Nanni, and T.S. Alster, 1999).

Multiple treatment, usually (6-8), but as many as 12, depending on the type of hair and skin color have been shown in practice to provide long-term reduction of hair. Current parameters suggest aseries of treatments aspaced at (4-6) weeks apart for most areas, although the timing of treatments has still not been standardized. (Sadick, 2004).

Equipment / instruments used in laser hair removal must be cleaned then either disinfected or sterilized or disposed of as appropriate after each client. Reusable equipments used to remove ingrown hairs must be cleaned and then sterilized, after each use. Equipment / instruments used to expose the in grow hairs. It's not used to remove in grow hair, but used only to pull the hair, must be cleaned and then disinfected with an intermediate or high-level disinfected between use.
Second group include (10) cases were treated by thermal device Electrolysis for longer period than IPL period as (30-90) minutes for each session depending on destiny of hair.

An electric current is conducted through a needle inserted into. The hair follicle, destroying hair growth cells. The heat produced by the current passing through an electrolysis needle will not cause the needle. To become hot enough to be sterilized, the temperature is only likely to reach (70-80 C) and the period that the current passes through the needle is too short (1-2 seconds only) for sterilization to occur. Needles used for electrolysis must be single-use, disposable, sterile never-use needles. (Gold, 2007).

Results and Discussion

<table>
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<tr>
<th>Table 1: Group (A) Distribution of the patients in different age (20-40) year before and after &quot;6&quot; sessions of treatment to exposure with (IPL) laser irradiation:</th>
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<tr>
<td><strong>No. Pt.</strong></td>
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<td>10 Mean ± SD</td>
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<th>Table 2: Group (B) Distribution of the patients in different age (20-40) year before and after &quot;8&quot; session of treatment to exposure with (IPL) laser irradiation:</th>
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<tr>
<td><strong>No. Pt.</strong></td>
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<td>10 Mean ± SD</td>
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I : In Table 1: Group (A) Laser can only effect the currently active growing follicles (anagen) (6) sessions are needed to kill hair in all phases of growth, with a percentage 100%.

In Table 2: Group (B) More sessions such as (8) depending on the type of hair, although the timing of treatments has still not been standardized and with a percentage 60%.

Laser hair removal is done while causing localized damage to the skin around the follicle of the hair, it is absolutely normal that the treatment comes with some and wanted side effects. (Kelly, and Nelson, 2004). IPL offers one of the few effective treatments to relieve the facial redness associated with the disorder. Such treatment may be administered by a dermatologist or other medical specialist with experience treating skin disorders.

Repetition rate is believed to have accumulative effect, based on the concept of thermal relaxation time. Shooting two or three pulses at the same target with a specific
delay between pulses can cause a slight improvement in the heating of an area. This may increase the "kill rate" for each treatment slightly.

IPL's (Intense Pulsed Light) work more directly on the top layers of the skin and do not penetrate deep enough to damage hair germ cells, without potential damage to the epidermis.

II: Electrolysis is effective on all hair colors. It's the only permanent solution for those types of hair but has short comings such as possible scanning, expense and discomfort, as noted above. (Yee-S. 2005). Most practitioners will advise that complete removal of facial hair takes between 1 and 4 years with an average treatment length of 2 years. (Purschke et al., 2010).

Conclusions
1- Laser hair removal was 60 times faster, less painful and more reliable than electrolysis.
2- Laser hair removal doesn't work on light hair. Because of the selective absorption of photons of laser light, only black hair can be removed.
3- New technology incorporates "dual mode filtering" and other important advances which result in safer and more effective treatment than older systems designed for hair removal.

References