Evaluation of patient satisfaction after treatment with the alexandrite laser for hirsutism

Farideh Jowkar, MD [1,2]
Najmeh Radgoodarz, MDi [3]
Nasrin Saki, MD [1,2]
Alireza Heiran [4]

1. Molecular Dermatology Research Center, Shiraz University of Medical Sciences, Shiraz, Iran
2. Department of Dermatology, Shiraz University of Medical Sciences, Shiraz, Iran
3. Department of Internal Medicine, Tehran University of Medical Sciences, Tehran, Iran
4. Student Research Committee, Shiraz University of Medical Sciences, Shiraz, Iran

Corresponding Author:
Nasrin Saki, MD
Shahid Faghihi Hospital, Molecular Dermatology Research Center, Department of Dermatology, Shiraz University of Medical Sciences, Shiraz, Iran
Email: nasrinsa85@yahoo.com

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Background: Laser treatment is a rapid, non-invasive procedure for long-term hair removal. Lasers operate based on the principle of selective photothermolysis and target melanin in the hair follicle. We intend to determine the level of hirsute patient satisfaction with the alexandrite laser hair removal procedure.

Methods: In this cross-sectional study 82 hirsute patients with unwanted hair on their faces were enrolled. The patients received treatment with a 755 nm alexandrite laser (GentleLASE, Candela Corporation, USA). We documented their level of satisfaction with this laser in terms of hair removal. Laser therapy, electrolysis, and depilation were compared.

Results: Patients ≥30 years old expressed greater satisfaction compared to those <30 years of age (P=0.03). Patients with medically related hirsutism had the same satisfaction as the idiopathic hirsute group (P=0.81). Patients rated laser hair removal as 4.12 compared to depilation and 3.96 compared to electrolysis. From total patients, 60.97% would recommend laser treatment to other hirsute patients. There were 79.3% of patients who expressed satisfaction with alexandrite laser hair removal.

Conclusions: Most patients expressed satisfaction with the alexandrite laser hair removal procedure. Age played a significant role in patient satisfaction.

Keywords: hirsutism, laser, laser therapy, hair removal, patients' satisfaction

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INTRODUCTION

Hirsutism is the excessive growth of terminal hairs in a woman with male pattern hair growth [1]. It is diagnosed clinically by the Ferriman-Gallwey scoring system [2]. Hirsutism, which affects more than 10% of women, may result from a high androgen level in the blood stream, polycystic ovarian syndrome (PCOS), congenital adrenal hyperplasia (CAH), or end-organ hypersensitivity to androgen receptors (idiopathic) [2,3]. Patients who present with amenorrhea, irregular menstruation, or signs of virilization should undergo endocrine assessment. Endocrine assessment use in the patients having amenorrhea, irregular menstruation, and virilization [2]. Methods for hair removal include mechanical (depilation, shaving, waxing), chemical (depilatory creams), electrolysis, and medications [1,4]. Lasers are a rapid, non-invasive technique for long-term hair removal [4]. The alexandrite, diode and Nd:YAG lasers can effectively reduce unwanted hair in a hirsute patient [1]. These lasers have wavelengths in the red and infrared electromagnetic spectrum [5]. Hair removal lasers work on the principle of selective photothermolysis where they induce hair follicle thermal injury

and target melanin in the hair follicle [6]. In lasers, different pulse durations, spot size, and energy density produce different clinical responses [7]. The majority of adverse effects appear in patients with skin type >III [8]; some include hyperpigmentation, hypopigmentation, pain, folliculitis, blisters, paradoxical hypertrichosis, and eye injuries [5]. The aim of this study is to determine the effects of age, skin type, hirsutism grade, causes of disease, number of treatment sessions, treatment ending time, and facial treatment site (upper lip, chin, lateral face, upper neck) on patient satisfaction with the alexandrite laser hair removal.

PARTICIPANTS AND METHODS

In this cross-sectional study, we collected and recorded all files that pertained to hirsute patients treated with the alexandrite laser (GentleLASE, Candela Corporation, USA). Patients whose files met the inclusion criteria entered the study. Inclusion criteria consisted of: hirsute patients who received treatment by the alexandrite laser on their faces; presence of colored and pigmented hairs; stopped anti-androgenic medications at least 6 months prior to the laser therapy treatment; received at least four laser therapy sessions; received the last laser therapy session at least 6 months prior; and had complete medical files. Exclusion criteria consisted of the following: patients who received laser therapy on other areas of their body; presence of white hairs; used anti-androgenic treatment during laser therapy and 6 months before laser-therapy; received fewer than 4 sessions of laser-therapy, completed treatment less than 6 months prior to study entry; and incomplete medical files. Among the eligible patients, we recruited 82 cases by simple random sampling. The sample size was calculated according to Cochran's sample size formula.

We extracted the following information from each patient's file: skin type assessed by the Fitzpatrick scale; hirsutism grade according to the Ferriman-Gallwey scoring system; cause; patient age; number of laser therapy sessions; treatment ending period; treated region; and other methods applied for removal of unwanted hair.

We contacted the patients at least six months after their last laser therapy session and recorded their satisfaction with the alexandrite laser hair removal. Satisfaction was graded (completely-dissatisfied, dissatisfied, relatively satisfied, satisfied, completely-satisfied) by a Likert scale, after which we converted the answers to a range of 1 to 5. Patients were asked about frequency of other hair removal treatments, electrolysis and depilation, and their satisfaction before laser therapy. The answers were recorded according to a Likert scale with 5 grades in order to compare the alexandrite laser treatment to electrolysis and depilation hair removal treatments. Ppatients were asked about the probability for recommending laser therapy to other hirsute patients.

The study proposal was approved by local Ethics Committee. Patients were asked to read and sign the informed consent forms if they would like to participate in the study.

For statistical analysis, we used SPSS (SPSS, Inc. version 16.0, Chicago, IL, USA). In order to determine a possible relation between patient satisfaction the seven factors extracted from their files, we used the ANOVA and Duncan tests.

RESULTS

We examined files from 82 patients in this study and extracted 7 necessary factors with the intent to determine the effects of these factors on patient satisfaction (Tables 1 and 2).

Satisfaction with laser-therapy was graded on a range from absolute satisfaction to absolute dissatisfaction. The results were: 8.5% (completely dissatisfied), 12.2% (dissatisfied), 50.0% (relatively satisfied), 12.2% (satisfied), and 17.1% (completely satisfied). Hence, 65 (79.3%) patients selected the "relatively satisfied – completely satisfied" option which indicated their satisfaction with alexandrite laser therapy.

There was a significant difference in terms of the effect of age on treatment satisfaction with alexandrite laser therapy (P=0.035). People over the age of 30 years expressed the most satisfaction (3.72) with treatment. The idiopathic groups had a higher average satisfaction rate of 3.24 compared to the other groups, however this difference was not statistically significant (P=0.81). According to Table 2, people with skin type IV expressed the least satisfaction (2.60) with treatment. This difference was not statistically significant (P=0.385) compared to the other skin types. Patients with 8 or more treatment sessions had a mean raw score

Table 1. Demographic and clinical characteristics of the patients.

Characteristics	Subcategories	Frequency	(%)
Disease cause	PCOS*	30	36.6
	Idiopathic	46	56.1
	Other	6	7.3
	Total	82	100
Grade of hirsutism	I	9	5.4
	II	45	27.1
	III	73	44.0
	IV	39	23.5
	Total	166	100
Patient age (years)	18–23	18	21.9
	24–29	33	40.3
	30–35	13	15.9
	>35	18	21.9
	Total	82	100
Patient skin type	I	1	12.0
	II	12	14.6
	III	59	72.0
	IV	10	12.2
	V	0	0.0
	Total	82	100
Treated site	Upper lip	47	28.3
	Chin	78	47.0
	Lateral face	9	5.4
	Upper neck	32	19.3
	Total	166	100
Number of treatment sessions	4	13	15.9
	5	17	20.7
	6	28	34.1
	7	20	24.4
	>7	4	4.9
	Total	82	100
Last treatment session	6–12 m months ago	36	43.9
	13–24 months ago	17	20.7
	25–36 months ago	29	35.4
	Total	82	100

*PCOS: Polycystic ovary syndrome.

of satisfaction for treatment with the alexandrite laser equaled to 2.75, which was not statistically significant compared to the groups with 4, 5, 6, and 7 treatment sessions(P=0.47). Patients whose treatments with the alexandrite laser ended 24-36 months earlier than the beginning of the study had a satisfaction mean raw score of 2.90, which also was not significant compared to the 6-12 and 13-24 month groups (P=0.21). Among treatment sites, patients that received treatment to the upper part of neck had an average satisfaction of 3.31, which was higher than the other treated sites. This finding was not statistically significant (P=0.93). We evaluated hirsutism grade in four sites-upper lip (P=0.7), chin (P=0.87), lateral face (P=0.83), and

Table 2. Comparison of patient satisfaction with alexandrite laser treatment according to several variables.

	Mean satisfaction (1-5)	*P*
Disease cause		
PCOS*	3.10	0.81
Idiopathic	3.24	
Other	3.00	
Grade of hirsutism		
Upper lip		
I	2.67	0.7
II	3.50	
III	3.30	
IV	3.25	
Chin		
I	2.75	0.87
II	3.27	
III	3.21	
IV	3.14	
Lateral face		
I	2.00	0.83
II	3.00	
III	2.67	
IV	3.00	
Upper neck		
I	3.00	0.87
II	3.50	
III	3.44	
IV	3.00	
Patient age (years)		
18–23	3.00	0.035†
24–29	2.85	
30–35	3.46	
>35	3.72	
Patient skin type		
I	3.00	0.385
II	3.33	
III	3.24	
IV	2.60	
Treated site		
Upper lip	3.30	0.93
Chin	3.19	
Lateral face	3.11	
Upper neck	3.31	
Number of treatment session		
4	2.85	0.47
5	3.00	
6	3.43	
7	3.25	
>7	2.75	
Last treatment session		
6–12 months ago	3.39	0.21
13–24 months ago	3.18	
25–36 months ago	2.90	

*PCOS: Polycystic ovary syndrome.
† P<0.05: Statistically significant difference.

Table 3. Satisfaction with depilation and electrolysis compared with alexandrite laser.

	Frequency	Completely Dissatisfied	Dissatisfied	Relatively Satisfied	Satisfied	Completely Satisfied	Mean Raw Score
Depilation	59	1	5	6	22	25	4.12
Electrolysis	23	0	3	3	8	9	3.96

upper neck (P=0.87). There were no statistically significant differences observed in these sites.

A comparison between laser satisfaction and depilation showed that 1.7% (one person) selected "completely dissatisfied", 8.5% selected "dissatisfied", 10.2% selected "relatively satisfied", 37.3% selected "satisfied", and 42.4% selected "completely satisfied. Results of satisfaction with depilatin and electrolysis demonstrated in Table 3.

In response to the question: "Would you recommend laser therapy treatment?" 10 (12.2%) chose "never", 22 (26.8%) selected "sometimes", 28 (34.1%) selected "in most cases", and 22 (26.8%) chose the "I always recommend" option.

DISCUSSION

Among the various methods for removal of unwanted hair, laser treatment is very desirable [4]. Currently, alexandrite lasers are the most widely used lasers for hirsutism treatment compared to other lasers.However, despite this generality, there is not much data [8]. A study on alexandrite laser conducted by Aldraibi *et al*.has indicated a 36% reduction in unwanted hair during six months. In their study, hair thickness decreased 31.5% in the laser-treated region. This study was performed on patients who had skin types IV-VI. Patients with skin type IV had the least amount (29%) of hair reduction, whereas patients with skin type VI had the most amount (48.6%) [6].

Among the studied variables, only age had a statistically significant effect on patient satisfaction (P=0.035). Although treatment satisfaction was higher than average among all studied age groups, patients ≥30 years had significantly greater satisfaction compared to those <30 years of age. None of the other studied factors such as disease cause, treatment times, skin type, treatment ending period, treated site, or disease grade had any statistically significant effect on treatment satisfaction. Similarly, Saleh *et al*. reported that disease cause did not significantly impact response to treatment [1]. Preston and Lanigan reported that the number of treatment sessions and skin type did not impact treatment satisfaction [9].

The study by Preston and Lanigan compared laser treatment with electrolysis. They reported a higher laser effect compared to electrolysis. In their study, 71% of patients expressed satisfaction with laser therapy [9]. In the present study, 60.9% said that "in the most cases – always", they would suggest laser therapy to others. The patients believed that the effectiveness of laser was more than depilation and electrolysis. The majority of patients' level of satisfaction with laser treatment was higher than the average amount compared with electrolysis and depilation. The majority of patients (79.3%) were satisfied with laser-therapy [9].

Most patients that used alexandrite laser therapy for removal of unwanted hair expressed satisfaction with the treatment. The willingness to suggest laser therapy to others has indicated patient satisfaction with this treatment. In this study, the effects of various factors on treatment satisfaction have been studied. Only age had a significant effect. The reason for decreased level of satisfaction in patients <30 years of age might be due to unrealistic expectations and ideas in this age group in terms of the effects of laser treatment.

REFERENCES

1. Saleh N, Badr Y, Shokeir H, et al. Comparative study between ruby, alexandrite and diode lasers in hirsutism. Egyptian Dermatology Online Journal. 2005;1(2):5.
2. Tosti, A; Piraccini, BM, editors. Diagnosis & treatment of hair disorders. 1st ed. London: Taylor & Francis, 2006.p. 2-3,73-76.
3. Mackie, RM. Clinical dermatology. 4th ed. New York: Oxford University Press Inc, 1997.p. 23-24,218-219.
4. Fatemi Naeini F, Nilforoushzade MA, Hassanzade Kashani H. Suitable distance between laser-therapy sessions for removing facial unwanted hairs. The Journal of Isfahan Dermatologists Association 2007;2:43-5. [Persian]
5. Alai N, Saemi AM, M. Ang J. (2009) Laser assisted hair removal. URL: http://emedicin.medscape .com / article/1831567-overview.[accessed on May 2, 2011]
6. Aldraibi MS, Touma DJ, Khachemoune A. Hair removal

with the 3-msec alexandrite laser in patients with skin types IV-VI: efficacy, safety, and the role of topical corticosteroids in preventing side effects. J Drugs Dermatol. 2007;6(1):60-6.

7. Nanni CA, Alster TS. Laser-assisted hair removal: side effects of Q-switched Nd: YAG, long-pulsed ruby, and alexandrite lasers. J Am Acad Dermatol. 1999;41(2 Pt 1):165-71.
8. Nanni CA, Alster TS. Long-pulsed alexandrite laser-assisted hair removal at 5, 10, and 20 millisecond pulse durations. Lasers Surg Med. 1999;24(5):332-7.
9. Preston PW, Lanigan SW. Patient satisfaction with laser hair removal. J Cosmet Dermatol. 2003;2(2):68-72.