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Combination of CO2 laser therapy and curettage for sebaceous gland hyperplasia

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Abstract

Introduction: Sebaceous hyperplasia (SH) is a common cutaneous disorder associated with cosmetic problems. Some optional treatments and various laser devices have been reported to be effective, but recurrence and cosmetic outcome have not been resolved.
Methods: This interventional study was performed on SH lesions. First, the lesions were treated with a CO_2 laser, and then the shrunken lesions were removed with a fine, sharp curette.
Results: A total of 46 patients (32 females and 14 males, mean age 39.9 ± 5.7 years) with SH skin lesions varying in severity were included in this study. The mean time of repair was 11.5 ± 1.9 days; a shorter repair time was seen in females and for mild extension lesions ($p < 0.001$). A fair cosmetic outcome was seen in 76.1% of cases, with better results reported for females and for skin types II and III ($p < 0.001$).
Conclusions: The method reported herein is an easy, rapid, and effective procedure for the complete removal of SH lesions with few complications in the majority of patients with numerous lesions and Fitzpatrick skin types II–IV. Cosmetic outcomes are better in females and skin types II and III.

Keywords: CO_2 laser therapy, sebaceous gland hyperplasia

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Introduction

Sebaceous hyperplasia (SH) is one of the most prevalent causes of benign skin lesions that most often develop in middle age and show an increasing prevalence over time. SH is usually characterized by yellow or skin-colored papules and nodules that are commonly located on the face. The goal in treating it is merely cosmetic improvement (1).

Many treatment modalities with varying cosmetic and treatment results have been suggested for the removal of SH lesions, including systemic isotretinoin (2), topical trichloroacetic acid (3), cryotherapy (4), intralesional electrodessication (5), shave excision and curettage (6), photodynamic therapy (7), and laser therapy (8–16).

CO_2 laser therapy is the gold standard and a popular modality for the ablation of most skin lesions, such as those caused by SH, in outpatient clinic procedure rooms. Proper use of a CO_2 laser leads to the precision ablation of skin lesions with minimal complications such as hypertrophic or atrophic scarring and post-inflammatory hyperpigmentation (15, 16).

This study was carried out to assess the treatment and cosmetic outcomes of a combination of CO_2 laser and curettage treatment for SH lesions.

Methods

Study design and population

This clinical interventional follow-up study was performed on 46 patients at the Hajdaie Dermatology Clinic of Kermanshah University of Medical Sciences in Iran over a period of 18 months in 2016 to 2017.

All participants were informed of the study aims and gave consent to participate before being included. Patients with typical clinical presentations were enrolled in the study; those with atypical manifestations had a histopathologic evaluation done before being included.

Patients with large lesions (larger than 10 mm), pregnant and breastfeeding women, those that had consumed oral isotretinoin in the previous 6 months, and patients with repair abnormalities were excluded from the study.

Demographic data, SH severity, and outcomes of treatment such as recovery time, cosmetic outcome, and complications were recorded on the questionnaire used in this study.

Severity of lesions and cosmetic classification

SH lesions were classified according to severity as limited (< 10 lesions), moderate (10–50 lesions), frequent (51–100 lesions), and very frequent (> 100 lesions). The cosmetic outcomes were categorized as 1) fair, with minimal or no scarring and no hypo- or hyperpigmentation; 2) moderate, with moderate scarring and/or hypo- or hyperpigmentation; and 3) poor, with prominent scarring and/or hypo- or hyperpigmentation.

Procedural methods (Figs. 1–3)

Topical EMLA was used as anesthesia and, 1 hour after its application, CO_2 laser therapy was begun. Patients that could not tolerate the procedure because of pain were injected intralesionally with lidocaine 2%.

Based on their thickness, SH lesions were subjected to 2 to 4 passes of pulsed CO_2 laser at 5 to 8 watts and 400 milliseconds pulse duration. Between laser passes, the debris tissue was wiped away with saline-soaked gauze.

Laser therapy resulted in a reduction in thickness, and the extent and altered texture of the lesion tissue from para-lesion normal skin tissue were determined. In this stage, laser-treated lesions

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were removed easily, precisely, and completely using a fine, sharp, disposable curette.

For secondary intention, the induced defect was washed with normal saline and dressed, and repair cream was applied for 7 to 10 days.

The duration of repair time was measured when 1) a significant decrease in ulcer depth was seen, 2) an absence of granulation tissue was noted, 3) a lack of exudation or discharge was observed, 4) there was an absence of ulcer or erosion in the defect, and 5) casting off of the probable eschar was seen.

Patients were evaluated weekly in the 1st month, once every 2 weeks in the 2nd and 3rd months, and then once every 3 months for a total of 12 months. Cosmetic outcomes were assessed after the 4th week or later.

Figure 1 | Patient with frequent sebaceous hyperplasia lesions.

Figure 2 | Sebaceous hyperplasia lesion treated with curettage and CO_2 laser.

Figure 3 | Treatment site after treatment with a fair cosmetic outcome.

Ethical considerations

This study was approved by the Ethics Committee of Kermanshah University of Medical Science and registered in the IRCT database (IRCT201702016403N7). Participant information was kept confidential.

Statistical analysis

Data were analyzed using the statistical software package SPSS, version 16. Qualitative analysis of the data was done using the chi-square test and Fisher's exact test. The Kolmogorov–Smirnov test was used to check the normality of the quantitative data. Levene's test and an independent sample *t*-test were also used to measure equality of variance and compare the means for the quantitative data of two categories.

Results

This study recruited 46 patients: 32 (69.6%) females and 14 (30.4%) males. The age range of participants was 29 to 54 years with a mean age of 39.9 ± 5.7 years. Skin types II, III, and IV were seen in nine (19.6%), 32 (69.6%), and five (10.9%) patients, respectively. Limited, moderate, frequent, and very frequent lesions were seen in five (10.9%), 12 (26.1%), 24 (52.2%), and five (10.9%) patients, respectively. Cosmetic outcomes were fair, moderate, and poor in 35 (76.1%), nine (19.6%), and two (4.3%) cases, respectively (Table 1).

Table 1 | Demographic and clinical characteristics of patients and outcome of CO_2 laser therapy.

Variables	*n* (%) or *mean ± SD*
Sex	
Female	32 (69.6%)
Male	14 (30.4%)
Mean time of age (years)	39.91 ± 5.69
Skin type	
Type II	9 (19.6%)
Type III	32 (69.6%)
Type IV	5 (10.9%)
Severity of lesions	
Limited	5 (10.9%)
Moderate	12 (26.1%)
Frequent	24 (52.2%)
Very frequent	5 (10.9%)
Mean time of repair (days)	11.48 ± 1.9
Cosmetic outcome	
Fair	35 (76.1%)
Moderate	9 (19.6%)
Poor	2 (4.3%)

SD = standard deviation.

Cosmetic outcomes in females were fair, moderate, and poor in 30 (93.8%), two (6.6%), and zero (0%) patients, respectively, and in males they were fair, moderate, and poor in five (37.7%), seven (50.0%), and two (14.3%) patients, respectively ($p < 0.001$). Fair cosmetic outcomes were more common in skin type II (88.9%) and skin type III (84.4%), but poor cosmetic outcomes were more common in skin type IV (40.0%) ($p < 0.001$). Fair cosmetic outcomes in patients with mild, moderate, frequent, and very frequent lesions were seen in 80.0%, 83.3%, 75.0%, and 60.0% of cases, respectively ($p = 0.767$). Cosmetic outcomes were significantly better in females ($p < 0.001$) and in skin types II and III (Table 2).

Table 2 | **Results of cosmetic outcome and repair time by variable.**

Variables	Cosmetic outcome (n, %)					Repair time	
	Fair	Moderate	Poor	Total	*p* value	Days	*p* value
Sex							
Female	30 (93.8)	2 (6.6)	0 (0.0)	32	0.001	10 ± 1.64	0.001
Male	5 (37.7)	7 (50.0)	2 (14.3)	14		13.07 ± 1.49	
Skin type							
Type II	8 (88.9)	1 (11.1)	0 (0.0)	9	0.001	11.11 ± 2.36	0.709
Type III	27 (84.4)	5 (15.6)	0 (0.0)	32		11.5 ± 1.84	
Type IV	0 (0.0)	3(60.0)	2 (40.0)	5		12 ± 1.58	
Severity of lesions							
Limited	4 (80.0)	1 (20.0)	0 (0.0)	5	0.767	9.2 ± 1.3	< 0.001
Moderate	10 (83.3)	2 (16.7)	0 (0.0)	12		11 ± 1.85	
Frequent	18 (75.0)	4 (16.7)	2 (8.3)	24		11.71 ± 1.57	
Very frequent	3 (60.0)	2 (40.0)	0 (0.0)	5		13.8 ± 1.09	

The mean repair time was 11.5 ± 1.9 days (range 8–15 days; Table 1).

The mean repair time was 10 ± 1.6 days in females and 13.1 ± 1.5 in males ($p < 0.001$). The mean repair times in skin types II, III, and IV were 11.1 ± 2.4, 11.5 ± 1.8, and 12 ± 1.6 days, respectively ($p = 0.709$). The mean repair times in limited, moderate, frequent, and very frequent lesions were 9.2 ± 1.3, 11 ± 1.85, 11.7 ± 1.6, and 13.8 ± 1.1 days, respectively ($p < 0.001$). Repair times were significantly shorter in females ($p < 0.001$) and for limited lesions (Table 2).

During the follow-up, in the 1st month 14 patients had moderate or prominent hyperpigmentation (3rd month: 10 patients, 6th month: nine, 9th month: eight, and 12th month: seven). In addition, in the 1st month six patients had moderate or prominent scarring (3rd month: six patients, 6th month: five, 9th month: five, and 12th month: five).

No recurrence was seen in patients during the follow-up period, but occasionally patients would refer with a few residual lesions, especially those with frequent or very frequent severity or incomplete removal of some lesions. In such situations, the residual lesions were treated in the follow-up period.

Discussion

This study showed that the combination of CO_2 laser therapy and curettage is an efficacious, safe, and simple method for the removal of SH lesions with positive cosmetic outcomes in the majority of patients. Cosmetic outcomes were significantly better in females and skin types II and III. Repair time was significantly shorter in females and in those with limited lesions.

Ataş et al. (4) found that cryotherapy was an effective method for treating SH, especially in males. The method used in this study was effective in removing SH lesions in both sexes, but favorable cosmetic results and shorter repair times were seen in females. This may be related to the intrinsic estrogen hormone, which influences wound repair, whereas androgens negatively affect cutaneous wound healing (17). Females are also more sensitive to their cosmetic appearance than males and tend to care more about wound defects.

This study found that skin types II and III experienced better cosmetic outcomes. Sriprachya-Anunt et al. (18) showed that post-inflammatory hyperpigmentation after CO_2 laser resurfacing was seen more often in skin type IV. It is concluded that appropriate care of a wound defect, especially avoidance of sunlight, is associated with satisfactory cosmetic outcomes even in dark skin.

In this study, patients with limited lesions had better cosmetic outcomes than patients with very frequent lesions. Extensive SH is more prevalent in men and in more damaged skin (19). This explains why skin repair and cosmetic outcomes are undesirable in abundant lesions.

Although photodynamic therapy is an effective treatment of choice with minimal complications for the removal of SH lesions, it requires multiple sessions and special equipment and is not available at most therapeutic centers (3, 7). The advantages of the method for curing SH discussed herein are the few treatment sessions required and the accessibility of a CO_2 laser device at most outpatient clinics.

Aghassi et al. (8) showed that the pulsed dye laser was an effective device for the treatment of SH, but only 28% of lesions completely disappeared with one session. Further limitations of this laser include expensiveness and unavailability (20).

Winstanley et al. (9) and No et al. (11) safely and successfully treated SH lesions using 1,720 nm and 1,450 nm diode lasers, respectively. The small number of cases, the time-consuming nature of the procedure, and most patients' lack of access to these devices were the main limitations reported for these lasers.

One case report described a man with multiple SH lesions that underwent CO_2 laser therapy followed by treatment with low-dose oral isotretinoin for 2 years. He was free of SH lesions over the 3-year follow-up period (21). Long-term systemic therapies, especially highly complicated drugs such as oral isotretinoin, are associated with high costs, more complications, and a lack of patient cooperation.

Kim et al. (13) introduced a simple procedure in a 55-year-old man with multiple SH lesions using the pinhole method with a CO_2 laser and acne extractor. This method appears to be somewhat similar to the method discussed in this article, but it requires skilled hands and reports lack a sufficient sample size. Moreover, two CO_2 irradiation sessions (one at the beginning and one at the end of this procedure) may increase scar formation.

In the method discussed in this article, SH lesions were first irradiated with a CO_2 laser, which induced shrinkage, altered texture consistency, and determined the extent of the lesions. To complete the lesion removal and prevent further thermal damage, a fine, sharp curette was used to easily dislodge the shrunken sebaceous lobules.

Conclusions

The procedure reported herein is an easy, rapid, and effective treatment of choice with few complications for the complete removal of SH lesions in both sexes, frequent lesions, and Fitzpatrick skin types II–IV. Cosmetic outcomes were better in females and skin type II. It is suggested that further studies evaluate this method and its cosmetic outcomes by assessing cases at several centers and by considering more variables such as the location and size of the SH lesions.

References

1. Eisen DB, Michael DJ. Sebaceous lesions and their associated syndromes: part I. J Am Acad Dermatol. 2009;61:549–60.
2. Tagliolatto S, Santos Neto Ode O, Alchorne MM, Enokihara MY. Sebaceous hyperplasia: systemic treatment with isotretinoin. An Bras Dermatol. 2015;90:211–5.
3. Simmons BJ, Griffith RD, Falto-Aizpurua LA, Bray FN, Nouri K. Light and laser therapies for the treatment of sebaceous gland hyperplasia a review of the literature. J Eur Acad Dermatol Venereol. 2015;29:2080–7.
4. Ataş H, Gönül M. Evaluation of the efficacy of cryosurgery in patients with sebaceous hyperplasia of the face. J Cutan Med Surg. 2017;21:202–6.
5. Bader RS, Scarborough DA. Surgical pearl: intralesional electrodesiccation of sebaceous hyperplasia. J Am Acad Dermatol. 2000;42:127–8.
6. Tagliolatto S, Alchorne MM, Enokihara M. Sebaceous hyperplasia: a pilot study to correlate this skin disease with circulating androgen levels. An Bras Dermatol. 2011;86:917–23.
7. Richey DF. Aminolevulinic acid photodynamic therapy for sebaceous gland hyperplasia. Dermatol Clin. 2007;25:59–65.
8. Aghassi D, Gonzalez E, Anderson RR, Rajadhyaksha M, González S. Elucidating the pulsed-dye laser treatment of sebaceous hyperplasia in vivo with real-time confocal scanning laser microscopy. J Am Acad Dermatol. 2000;43:49–53.
9. Winstanley D, Blalock T, Houghton N, Ross EV. Treatment of sebaceous hyperplasia with a novel 1,720-nm laser. J Drugs Dermatol. 2012;11:1323–6.
10. Riedel F, Bergler W, Baker-Schreyer A, Stein E, Hörmann K. Controlled cosmetic dermal ablation in the facial region with the erbium:YAG laser. HNO. 1999;47:101–6.
11. No D, McClaren M, Chotzen V, Kilmer SL. Sebaceous hyperplasia treated with a 1450-nm diode laser. Dermatol Surg. 2004;30:382–4.
12. Truchuelo MT, Allende I, Almazán-Fernández FM, Boixeda P. Pulsed dye laser treatment for multiple sebaceous hyperplasia secondary to cyclosporine. Actas Dermosifiliogr. 2011;102:470–1.
13. Kim JH, Park HY, Lee WS, Kang JS. Sebaceous hyperplasia effectively improved by the pin-hole technique with squeezing. Ann Dermatol. 2013;25:257–8.
14. Krupashankar DS. Standard guidelines of care: CO_2 laser for removal of benign skin lesions and resurfacing. Indian J Dermatol Venereol Leprol. 2008;74 Suppl:S61–7.
15. Kavoussi H, Ebrahimi A, Rezaei M. Treatment and cosmetic outcome of superpulsed CO_2 laser for basal cell carcinoma. Acta Dermatovenerol Alp Pannonica Adriat. 2013;22:57–61.
16. Alster T, Hirsch R. Single-pass CO_2 laser skin resurfacing of light and dark skin: extended experience with 52 patients. J Cosmet Laser Ther. 2003;5:39–42.
17. Guo S, Dipietro LA. Factors affecting wound healing. J Dent Res. 2010;89:219–29.
18. Sriprachya-Anunt, S, Marchell, N, Fitzpatrick, RE, Golman MP, Rostan EF. Facial resurfacing in patients with Fitzpatrick skin type IV. Lasers Surg Med. 2002;30:86–92.
19. Zouboulis CC, Boschnakow A. Chronological ageing and photoageing of the human sebaceous gland. Clin Exp Dermatol. 2001;26:600–7.
20. Veitch D, Kravvas G, Al-Niaimi F. Pulsed dye laser therapy in the treatment of warts: a review of the literature. Dermatol Surg. 2017;43:485–93.
21. Noh S, Shin JU, Jung JY, Lee JH. A case of sebaceous hyperplasia maintained on low-dose isotretinoin after carbon dioxide laser treatment. Int J Dermatol. 2014;53:e151–3.