Laser hair removal alters the disease course in mild hidradenitis suppurativa

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To the Editor:

Hidradenitis suppurativa (HS) is a chronic, recurrent inflammatory skin disorder of the hair follicle and is characterised by painful, deep-seated inflammatory nodules and abscesses.[1] The disease is difficult to treat, and current medical therapies focus on reducing inflammation rather than preventing flare-ups or sustaining remission.[2] In HS, occlusion of the hair follicle, caused by infundibular keratosis and hyperplasia of the infundibular epithelium, is considered to be the primary event.[3,4] We hypothesised that targeting the hair follicle with laser hair removal would ameliorate the disease. The aim of this case series was to evaluate the effect of hair removal using a long-pulsed 1064-nm neodymium-doped yttrium aluminum garnet (Nd:YAG) laser on the course of the disease in patients with mild HS.

The laser treatments were performed between July 2011 and December 2016 in the Dermatology department of the Erasmus University Medical Center (Rotterdam, The Netherlands). A questionnaire was sent to assess patient-reported outcomes. The primary outcome was the number of HS flares per month, and secondary outcomes were disease severity on a numeric rating scale (NRS) ranging from 0 (no suffering) to 10 (extreme/unbearable suffering), overall treatment satisfaction (NRS: 0 very dissatisfied; 10 very satisfied), and decrease of hair growth in the treated area (quartile grading scale). Descriptive statistics were used to report the outcomes with the mean (± SD) or number (%). For comparison of the number of monthly flares and the disease severity before and after treatment, the Fisher's exact test and the Wilcoxon signed rank test were used, respectively. A two-sided *p*-value of 0.05 was considered significant. Statistical analysis was performed using IBM SPSS Statistics Version 21.0 (Armonk, NY: IBM Corp).

Twenty-seven HS patients with the follicular sub-phenotype and mild disease (HS Physician Global Assessment score of 2, Hurley stage I-A) who had undergone hair removal using the Nd:YAG laser were identified from our records. Two patients were excluded as they had received suboptimal therapy of less than three treatments. The questionnaire was sent to the remaining 25 patients: two patients refused participation and eight patients did not respond to the invitation, resulting in 15 completed questionnaires. Ten men and five women, aged 34.1 ± 10.1 years with a body mass index of 25.1 ± 3.7 were included in the analysis. Twelve patients (80%) were current or ex-smokers, and eleven patients (73%) had skin types of II–III on the Fitzpatrick scale. Patients were most often treated in the inguinal/genital area and received approximately ten treatments on average. The laser settings that were used are shown in Table 1. Three patients received stable systemic co-medication for HS prior to (≥ 28 days) and during the course of the laser hair removal (clindamycin 300 mg twice

Table 1. Characteristics of treatment by laser hair removal.

Type of laser	**1064 nm Nd:YAG^**
Range of settings Nd:YAG	30-60 J/cm^2
	spot size 7-12 mm
	20-40 ms
	2 passes†
Areas, n	
Axillary	5
Inguinal/genital	10
Gluteal/perianal	6
Other*	3
Mean number of treatments ± SD	9.8 ± 9.4
Mean interval ± SD, weeks	5.6 ± 0.1
Mean follow-up ± SD, months	14.9 ± 14.1

^ One patient received 8 treatments with Nd:YAG followed by 11 treatments with Intense Pulsed Light (IPL). † Twelve patients received 2 passes, one patient received mostly 2 passes, and two patients received 1 pass. * Neck, thorax, thigh. SD: standard deviation.

daily and rifampicin 600 mg once daily, minocycline 100 mg once daily, and acitretin 25 mg once daily). None of these treatments statistically affected the study outcomes.

Nd:YAG depilation resulted in a decrease in the number of monthly flares (p = 0.019) (Table 2). In addition, the mean HS disease severity after depilation was significantly lower than before therapy, NRS 6.4 ± 2.8 versus NRS 3.6 ± 3.5 (p = 0.010) respectively. The majority of patients reported a 51-75% decrease of hair growth after treatment. Overall treatment satisfaction was rated with a NRS score of 6.7 ± 2.4, and two-thirds of the patients would recommend laser-assisted hair removal to other HS patients.

Three studies have previously demonstrated improvement of HS after 1064 nm Nd:YAG treatment. These studies focused mainly on targeting the inflammatory lesions (inflammatory nodules, abscesses, and sinuses).[5-7] Treatment involved two to three pulses on the lesions, and the anatomic area also a single pass. We used a different approach by destroying the hair follicles with the intention of altering the course of the disease. Because of this difference in approach, our HS patients were less severely affected than those in previous studies (Hurley II and III disease). Moreover, in the previous studies patients received fewer treatments (maximum four sessions), and the follow-up period was relatively short (maximum two months).[5-7] One study investigated the efficacy of intense pulsed light (IPL) in Hurley stage II and III HS patients; this showed significant improvement in the modified Sartorius score after a follow-up at twelve months.[8]

Table 2. Patient-reported outcomes on the area(s) treated by Nd:YAG (N = 15).

	Before treatment*	After treatment	*p*-value
Flares per month, n			0.019 ^
<1	4	8	
1	2	0	
2	1	3	
3	3	3	
>3 / continuous inflammation	5	1	
Mean NRS for HS disease severity ± SD, (0-10)	6.4 ± 2.8	3.6 ± 3.5	0.010 †
Decrease of hair growth after Nd:YAG			
0-25%		1 (7%)	
26-50%		5 (33%)	
51-75%		7 (47%)	
75-100%		2 (13%)	
Mean NRS for pain due to Nd:YAG ± SD, (0-10)		5.4 ± 2.6	
Mean NRS for overall treatment satisfaction ± SD, (0-10)		6.7 ± 2.4	
Recommendation of laser depilation to other HS patients, n (%)			
yes		10 (67%)	
doubt		4 (26%)	
no		1 (7%)	

NRS: numeric rating scale (0-10). HS: hidradenitis suppurativa. SD: standard deviation * Average number of flares before treatment based on period 6 months prior to treatment. ^ Fisher's exact test. † Wilcoxon signed rank test.

A major strength of our study is that we focused, to the best of our knowledge, for the first time on disease prevention and used the number of flares as an outcome measure. Another strength is the relatively long follow-up period of more than one year. However, this survey-based case series is likely to be underpowered, and the findings we obtained could be biased due to natural fluctuation of the disease course. Other limitations are a possible recall bias and the absence of physician-reported outcomes such as counts of abscesses and nodules.

In conclusion, our results suggest that laser hair removal could be a novel therapeutic approach to prevent disease progression or ameliorate the disease, especially in HS patients with the follicular sub-phenotype. We believe that prospective randomised controlled trials are warranted to confirm the mechanism of action and long-term efficacy of laser hair removal in mild HS.

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