

The use of 1,340nm ND:YAP laser to treat hidradenitis

Tratamento de hidrosadenite com laser ND:YAP 1340 NM

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Received on: 21 January 2015

Approved on: 11 March 2015

This study was carried out at the Faculdade de Medicina de São José do Rio Preto (FAMERP) – São José do Rio Preto (SP), Brazil.

Financial support: none

Conflict of interest: none

ABSTRACT

Introduction: Hidradenitis is a chronic inflammatory disease that has a negative impact on the patient's quality of life but which has few effective therapeutic options. Currently, the use of laser technology has been standing out as a treatment.

Objective: To evaluate the use of 1,340nm ND:YAP laser (Neodimium:Yttrium Aluminum Perovskite) to treat hidradenitis.

Methods: Performing 4 1,340nm ND:YAP laser sessions in 3 patients bearing hidradenitis.

Results: All patients had a clinically and histologically evidenced reduction of inflammatory lesions.

Conclusions: In the present study, the 1,340nm ND:YAP laser was effective in the treatment of hidradenitis, and can potentially become a new therapeutic option.

Keywords: hidradenitis; lasers; laser therapy

RESUMO

Introdução: A hidrosadenite é doença inflamatória crônica que tem impacto negativo na qualidade de vida dos pacientes e poucas opções terapêuticas eficazes. Atualmente, o uso de tecnologias a laser tem-se destacado para seu tratamento.

Objetivo: Avaliar o uso do laser ND:YAP (Neodimium: Yttrium Aluminum Perovskita) 1340nm no tratamento de hidrosadenite.

Métodos: Realização de quatro sessões de laser ND:YAP 1340nm em três pacientes portadoras de hidrosadenite.

Resultados: Todas as pacientes apresentaram redução das lesões inflamatórias evidenciadas clínica e histopatologicamente.

Conclusões: O laser ND-YAP 1340nm mostrou-se eficaz no tratamento de hidrosadenite neste trabalho, podendo representar nova opção terapêutica à hidrosadenite.

Palavras-chave: hidradenite; lasers; terapia a laser

INTRODUCTION

Hidradenitis is a chronic and recurrent inflammatory disease that affects flexural areas of the skin, such as the armpits, and the inframammary and groin regions.¹ It is a painful and often disfiguring condition, which manifests after puberty and is characterized by deep inflammatory lesions in the region of the apocrine glands.² The prevalence of hidradenitis in the general population is about 1%, affecting more women than men (4:1), and is associated with genetic and hormonal predisposition (androgen excess).^{2,3,4}

Hidradenitis initially emerges as an inflammation around the hair follicle, followed by a series of damaging events that lead to a rupture of the follicular infundibulum, forming deep painful nodules and abscesses that generate fistulas and scarring. This sequence of events tends to be recurrent in most patients.^{3,5} Thus, hidradenitis may arise in the form of abscesses, folliculitis, pyogenic granuloma, comedones, fistulas, scars, and keloids.⁶

Given the variety of possible manifestations of this disease, the Hurley's staging system is used to classify the picture into three stages. During Stage I there are one or more separate abscesses, but an absence of fistulae or scars; in Stage II there are one or more separate abscesses, and scarring and fistula formation; and in Stage III there is a confluence of the lesions with interconnected fistulas and abscesses.^{1,3} The lesions' pathophysiology involves both follicular innate immunity defect and hyper-reactivity to coagulase-negative staphylococci.⁶

Hidradenitis can have significant clinical consequences, but most of all it can negatively affect a patient's quality of life.^{1,7} The pain picture, the unpleasant odor, and the scars are all factors that have an impact on patients.⁸ Despite the importance of a treatment to resolve this condition, the current options are limited, and there is a lack of studies involving safe and effective therapies.²

Pharmacological treatments include topical and oral antibiotics, intralesional corticosteroids, hormone therapy, retinoids, immunosuppressants and biological agents. Surgical treatments vary from drainage and incision procedures to debridement and a wide surgical excision of fistulas and abscesses. Most recently, there have been reports of the use of technologies such as diode laser, CO₂ laser, Nd:YAG (Neodimium:Yttrium Aluminum Garnet) and photodynamic therapy with good results in the treatment of hidradenitis.^{1,3,8,9}

Due to the success of some laser types in hidradenitis, the authors sought to evaluate the use of a new technology, the 1,340nm Nd:YAP (Neodimium:Yttrium Aluminum Perovskite). This laser was effective in the treatment of inflammatory acne through the organization of the collagen fibers and reduced inflammatory infiltrate.¹⁰ Thus, since it is also a chronic inflammatory disease, the authors sought to obtain positive results in the treatment of hidradenitis with 1,340nm ND:YAP.

METHODS

Three female patients, all bearers of hidradenitis at Hurley's Stages I or II, who were being treated at the Dermatology Ambulatory of the Faculdade de Medicina de São Jose do Rio Preto (FAMERP), were selected. The patients had already

undergone drug treatments without success. They did not use systemic or topical therapy for three weeks and had not undergone previous surgical treatment. The diagnosis of pregnancy was excluded for the three patients. The study was approved by the Research Ethics Committee of FAMERP.

In a prospective study, the patients underwent four 1,340nm ND:YAP laser sessions (Etherea[®], Industria Tecnologias Indústria e Comércio Ltda., São Carlos, São Paulo, Brazil), with the following parameters: 100mJ, 100mtz and 8mm tip. The interval between sessions was one month. The response to the treatment was assessed through a comparison of photographs taken prior to and one month after the fourth laser therapy session.

Two dermatologists unrelated to the study compared the photographs and classified them as follows: 0 – worsening, 1 – lack of improvement, 2 – moderate improvement, and 3 – significant improvement. Each patient's degree of satisfaction was evaluated based on a rating scale of: 0 – unsatisfied; 1 – somewhat satisfied; 2 – satisfied; and 3 – very satisfied.

RESULTS

The objective analysis of the photographs carried out by dermatologists unrelated to the study was rated with "significant improvement" of the inflammation in all cases (Figures 1 and 2). The three patients were very satisfied with the outcome and showed only mild erythema and pain as adverse effects to the treatment. During the six months following the treatment, none of the patients had a recurrence.

A chronic inflammatory process with significant lymphocytic inflammatory infiltrate and disorganization of collagen fibers was observed in a histological examination performed prior to the treatment (Figures 3 and 4). After the treatment, however, a significant reduction of the inflammatory infiltrate and organization of collagen fibers became apparent (Figures 5 and 6).

DISCUSSION

Hidradenitis is a chronic inflammatory disease that adversely affects a patient's quality of life and is associated with clinical morbidity. Nevertheless, there is a lack of effective and permanent treatment for this disease, since recurrences are frequent.^{1,11} Laser treatment has the advantage of being restricted to the affected body site and not being associated with systemic side effects.³

1,064nm ND:YAG laser (Neodymium:Yttrium Aluminum Garnet) laser has recently shown good results in the treatment of hidradenitis.^{1,3,12,13} According to Mahmoud et al. 2010,³ it is likely that the mechanism of action responsible for the therapeutic success is the follicular ablation and destruction of inflammatory lesions through selective photodermolysis.

In the present study, the authors describe the unprecedented success of 1,340nm Nd:YAP laser to treat hidradenitis. This technology has already proven effective in the treatment of inflammatory acne, with possible similar action in fibrosis and inflammation, which also characterize the hidradenitis.¹⁰ Thus, it was possible to guarantee satisfaction to patients and approval



FIGURE 1: Left: Before the treatment; Right: One month after the fourth 1,340nm Nd:YAP session



FIGURE 2: Left: Before the treatment; Right: One month after the fourth 1,340nm Nd:YAP session

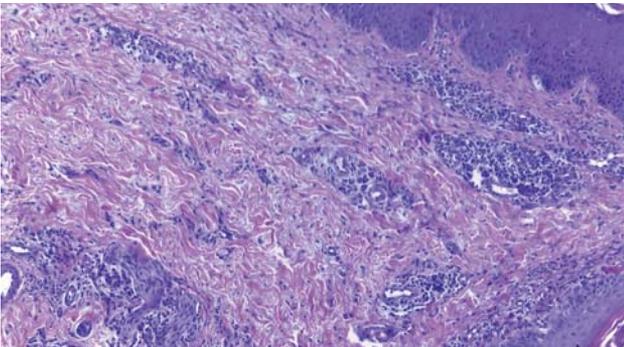


FIGURE 3: Before the treatment: lymphocytic inflammatory infiltrate and disorganization of collagen fibers

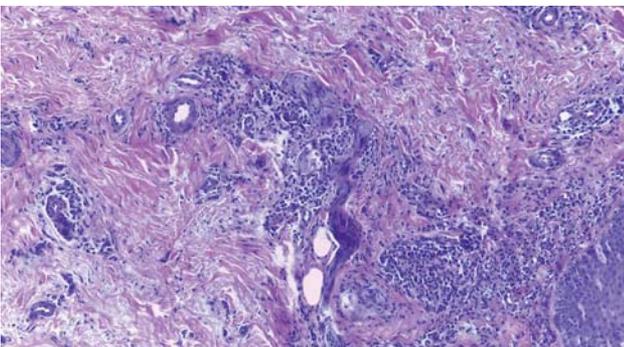


FIGURE 4: BEFORE THE TREATMENT: LYMPHOCYTIC INFLAMMATORY INFILTRATE AND DISORGANIZATION OF COLLAGEN FIBERS

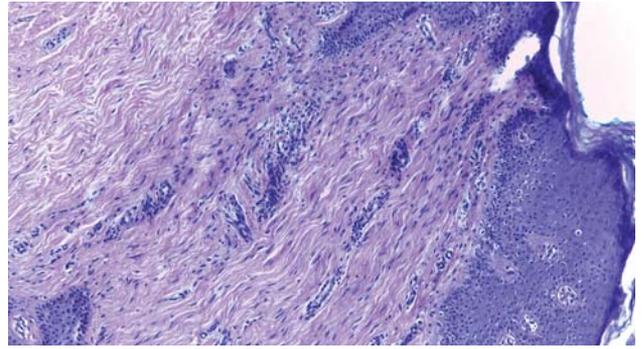


FIGURE 5: After the treatment: significant reduction of the lymphocytic inflammatory infiltrate and organization of collagen fibers

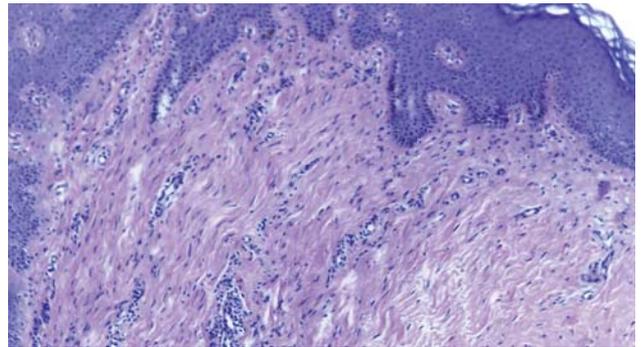


FIGURE 6: After the treatment: significant reduction of the lymphocytic inflammatory infiltrate and organization of collagen fibers

from a medical point of view, confirming this therapy's efficacy in the histological examination.

The action of 1,340nm Nd:YAP in hidradenitis lesions (Stages I and II) was demonstrated to be durable, with no recurrence reported within the six months following the treatment. Side effects were minimal and localized. Therefore, the authors sought a safe and effective therapeutic alternative in the face of a condition having a great impact on the patient.

CONCLUSION

Since it is a case of a pathology associated with functional, aesthetic, and psychological damage, hidradenitis calls for effective therapeutic methods. In the present study, the authors conclude that 1,340nm Nd:YAP laser was effective and safe in three patients with hidradenitis, presenting a new therapeutic modality for the condition. Further studies on the different hidradenitis stages and with longer follow up are necessary.¹ ●

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