

Photobiomodulation as a treatment in dogs with black hair follicular dysplasia

Fotobiomodulação como tratamento para displasia folicular do pêlo preto

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ABSTRACT

Non-inflammatory alopecia can affect animals at any age, but it is necessary to rule out other skin diseases, endocrinopathies and neoplasms, and when diagnosed there is no definitive and standardized treatment, thus the objective is to try to repilate the patient with integrative therapy. Canine patient treated in the dermatology sector at a veterinary clinic in Espírito Santo, with alopecia, hypotrichosis and desquamation all over the body where it has black fur. As a treatment with EccoVet® equipment, photobiomodulation was performed using red light at a power of 2 joules with follicular growth effect, and blue and green light with an action equal to red light, but adding the effect of shine and softness on the coat and skin hydration, being performed just one weekly session. As a result, the patient started to repilate soon after the first session and achieved total improvement after five sessions. It is concluded that photobiomodulation promotes follicular growth of alopecia in dogs, provided that the protocol indicated for each situation is chosen, in a fast, non-invasive and practical way.

Keywords: Histopatological, Dermatology, Hair loss.

RESUMO

A alopecia não inflamatória pode acometer animais em qualquer idade, porém é preciso descartar outras doenças de pele, endocrinopatias e neoplasias, e quando diagnosticada não há tratamento definitivo e padronizado, sendo assim o objetivo é tentar repilar o paciente com terapia integrativa. Paciente canino atendido no setor de dermatologia em clínica veterinária no Espírito Santo, apresentando alopecia, hipotricose e descamação em todo o corpo onde apresenta pelagem preta. Como tratamento foi realizada a fotobiomodulação com o equipamento da EccoVet® utilizando luz vermelha na potência de 2 joules com efeito de crescimento folicular, e luz azul e verde com ação igual a luz vermelha, porém agregando o efeito de brilho e maciez na pelagem e hidratação da pele, sendo realizou apenas uma sessão semanal. Como resultado, a paciente começou a se depilar logo após a primeira sessão e obteve melhora total após cinco sessões. Conclui-se que a fotobiomodulação promove o crescimento folicular da alopecia em cães, desde que seja escolhido o protocolo indicado para cada situação, de forma rápida, não invasiva e prática.

Palavras-chave: Histopatológico, Dermatologia, Perda de cabelo.

1 INTRODUCTION

Follicular dysplasias are hereditary and rare skin diseases, carrying anatomical abnormalities and demelanization of pilosebaceous units¹ These dysplasias are related to coat color and are similar in histopathological and genetic parameters, but present clinically different, being Acia by Dilution of Courage (ADC) most commonly observed in a disseminated form and Black Hair Follicular Dysplasia (DFPP) in the localized form¹.

That report to be a primary problem in the hair follicle exist in an attempt to search for defective production on the follicles, causing accumulation of follicular follicles in the follicles of the epidermis². As there is a disordered production of the hair matrix cells, a transfer of pigment to the growing hairs does not normally, as in other coat nuclei, and then as the rushes become weak and the hair falls out³.

Integrative therapies have been increasingly studied and used with the aim of reducing conventional treatment time and medication side effects. Photodynamic therapy (or laser therapy) has been extensively studied in the health area in recent decades, and has been widely used as an alternative to conventional treatments in localized lesions because it is very effective in accelerating tissue healing and also in the association of Low-intensity laser with photodynamic therapy induces the occurrence of beneficial actions to the affected tissue, thus reducing local inflammation, causing analgesia and tissue restoration⁴. The response that we observed, that is, the reduction of lesions, occurs because the therapy increases vascularization and, thus, generates an increase in the supply of nutrients and oxygen to the lesion site, in addition, it promotes the healing stimulus, through an positive in cell proliferation, including fibroblasts, which helps in the fast and organized response of tissue recovery⁵.

2 CASE REPORT

Canine patient, Pinscher breed, 11 years old, was seen in the dermatology sector at a veterinary clinic in Vila Velha (ES) with alopecic, hypotrichotic and scaling areas due to more intense hair loss in recent months. According to the tutor, the animal did not show itching, and only the region of the body with black fur started to fall out.

Dermatological tests such as skin cytology and trichogram were performed, but as they did not present significant results, histopathological examination was performed using the skin biopsy technique only with local anesthesia due to the age of the patient in order not to undergo more invasive procedures. In this exam, follicular dysplasia of the black hair was diagnosed, that is, a non-inflammatory alopecia that could progress to the loss of the patient's entire black coat.

As an initial treatment, only photobiomodulation therapy was suggested using red light at a power of 2 joules using the ECCOVET equipment cluster, with the aim of stimulating follicular growth. Blue and green cluster light was also used for 60 seconds to stimulate follicular growth, reduce flaking, improve coat shine and moisturize the skin.

After one week, the animal returned to the clinic, showing absence of desquamation and follicular growth in all alopecic and hypotrichotic areas. Weekly sessions were recommended to observe the evolution of the patient's dermatological clinical picture. After five sessions of photobiomodulation, the patient presented complete hair removal, thus obtaining medical discharge to perform maintenance at home with medication to improve the quality of the coat.

3 RESULTS AND DISCUSSION

The patient showed a significant improvement after the first session (with seven days), and at each subsequent session the patient presented more intense follicular growth, and after five sessions obtaining complete repilation and with that it was possible to preserve the entire black coat of the animal.

In humans, low-frequency laser therapy is widely used for alopecia, which can be characterized by the lack or reduction of hair and/or hair⁴. There are several types of alopecia, such as androgenetic, which is one of the best known, and areata, caused by genetic predisposition and aggravated by factors such as stress and autoimmune diseases^{4,7}.

Low-intensity lasers have a low energy density, and thus expose cells or tissues to low levels of red light when compared to other forms of laser therapy that are used, for example, for ablation, cutting and thermal coagulation. of fabric⁴. This therapy is also known as “cold laser”, due to its power density being lower than that needed to generate tissue heating⁴.

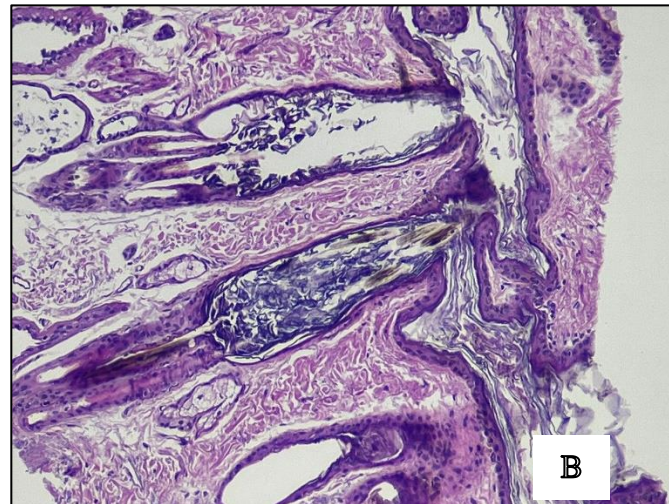
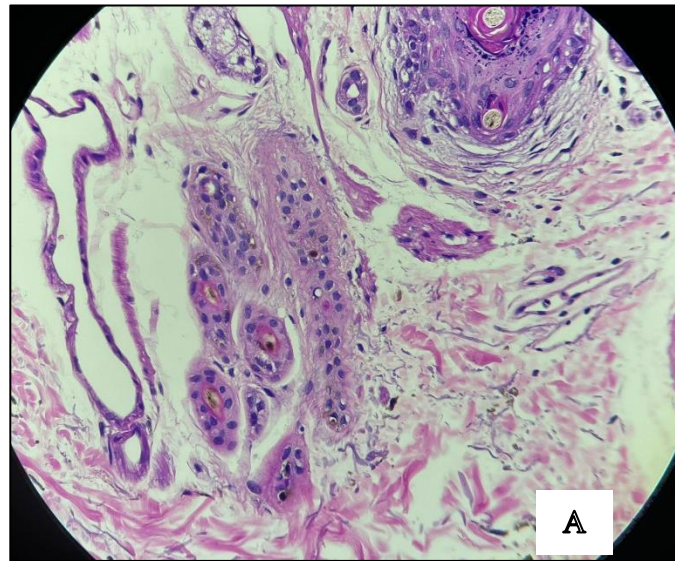
Photobiomodulation therapy has shown positive effects when it comes to faster healing and repair of injured tissue⁵. In the veterinary medical literature, it was observed that the same therapy used as an adjunct in the treatment of wounds in horses obtained satisfactory results regarding the stimulating effect of tissue healing⁶. In addition, other authors have also reported that this therapy has positive effects on healing, preventing and reducing the formation of necrosis at the edges of wounds, helping to control local infection, collagen synthesis and deposition, revascularization, and thus accelerating tissue repair⁵.

However, there are still no reports in animals about the possibility of photobiomodulation to stimulate follicular growth, especially quickly and without associated medication, as in this case report described above (figure 1). In addition, it was possible to confirm by histopathological examination before treatment and after treatment, that of all the follicles, only one follicle had melanin inside it (figure 2).

Figure 1. A – Before treatment with Photobiomodulation. B – After five sessions of photobiomodulation.



Figure 2. A – Histopatological before treatment with Photobiomodulation. B – Histopatological after five sessions of photobiomodulation.



4 CONCLUSION

It is concluded that complementary therapies, such as photobiomodulation, have several indications and in dermatology it is possible to observe quick results, in a non-invasive way and without stressing the animal because they are fast to perform. In addition, it is another alternative to stimulate follicular growth without the use of medication.

In this way, it is possible to prove to the veterinary medical profession and to the population that it is possible to treat the patient without risking life or complications.

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