Journal of Biodentistry and Biomaterials

ISSN 2238 - 5622

DOI:10.29327/2236-1006.2021.277

Terapia de fotobiomodulação adjuvante para restabelecimento do olfato após COVID-19: relato de caso.

Adjuvant Photobiomodulation Therapy for COVID-19 olfactory impairment: a case Report

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Resumo

Embora o comprometimento olfatório seja comumente observado em pacientes com a Doença do Novo Coronavírus 19 (COVID-19), pouco ainda se sabe sobre a exata fisiopatologia e opções de tratamento. Assim, o presente trabalho teve como objetivo relatar um caso em que um paciente com COVID-19 recebeu terapia de fotobiomodulação (TFBM) intranasal adjuvante para comprometimento olfatório. Paciente do sexo masculino, 51 anos, com comprometimento olfatório após 60 dias da confirmação do COVID-19, recebeu TFBM intranasal durante 10 dias consecutivos como terapia adjuvante. No início do tratamento e após 90 dias, foram utilizadas a versão em português do Teste de Identificação do Olfato da Universidade da Pensilvânia (UPSIT) e uma escala visual analógica (EVA) de 0 a 10 para avaliação da percepção olfativa. Os escores obtidos no UPSIT foram 30 e 34 e na EVA 6 e 4, respectivamente. De acordo com o caso apresentado, a TFBM adjuvante parece ser eficiente no tratamento do comprometimento olfativo associado ao COVID-19.

Descritores: COVID-19; Lasers; Terapia de luz de baixo nível; Percepção olfativa; Fotobiomodulação; SARS-CoV-2; Cheiro.

Abstract

Although olfactory impairment is commonly seen in patients with the Novel Coronavirus Disease 19 (COVID-19), little is still known on the exact pathophysiology and treatment options. Thus, the present paper aimed to report a case in which a COVID-19 patient received adjuvant intranasal PBMT for olfactory impairment. A 51-year-old male patient presenting olfactory impairment after 60 days from COVID-19 confirmation received intranasal PBMT during 10 consecutive days as adjuvant therapy. The patient was submitted at baseline and after 90 days to the Brazilian-Portuguese version of the University of Pennsylvania Smell Identification Test (UPSIT) and a 0–10 visual analog scale (VAS). The scores, at baseline and after 90 days, obtained from the UPSIT were 30 and 34 and from the VAS were 6 and 4, respectively. According to the current case, adjuvant PBMT seems to be of value in the management of COVID-19 olfactory impairment.

KEYWORDS: COVID-19; Lasers; Low-level light therapy; Olfactory perception; Photobiomodulation; SARS-CoV-2; Smell.

Introduction

Although olfactory impairment is commonly seen in viral infections, little is still known on the exact pathophysiology. Patients with the Novel Coronavirus Disease 19 (COVID-19), therefore, may also experience some degree of olfactory dysfunction, which along with other respiratory symptoms should alert physicians to COVID-19 infection.[1]

The management of COVID-19-related olfactory impairment varies considerably in the literature: while some cases resolve spontaneously with no treatment, others require olfactory training or medications (e.g., oral or intranasal corticosteroids, intranasal sodium citrate, intranasal vitamin A, oral omega-3). Very recently, Brazilian researchers proposed intranasal photobiomodulation therapy (PBMT) as a promising therapeutic modality for treating olfactory impairment in COVID-19 patients.[2]

In light of these facts, here we are reporting a case in which a COVID-19 patient received adjuvant intranasal PBMT for olfactory impairment.

Case Report

A 51-year-old male patient presenting olfactory impairment after 60 days from COVID-19 confirmation received Prednisolone 40mg once a day (first 7 days) and was advised to perform olfactory training sessions (essential oils of rose, lemon, cloves, and eucalyptus) twice a day for 90 days. Intranasal PBMT was also used during consecutive days (first 10 days), as follows: 780 nm; 4 J, 142 J/cm^2, and 40 s, in each nostril (Figure 1).

The patient was submitted at baseline and after 90 days to the Brazilian-Portuguese version of the University of Pennsylvania Smell Identification Test (UPSIT, scores: anosmia, 6–18; severe microsmia, 19–25; moderate microsmia, 26–30; mild microsmia, 31–34; normal smell perception, 35–40) and a 0–10 visual analog scale (VAS) was used to subjectively assess smell perception (mild microsmia, 0–2; moderate microsmia, 3–7, severe microsmia, 8–10). The scores, at baseline and after 90 days, obtained from the UPSIT were 30 and 34 and from the VAS were 6 and 4, respectively.

Discussion

The only available study on PBMT for COVID-19-associated olfactory impairment[2] presented a series of cases in which 3 different laser protocols were used but a conclusion on the more efficient one could not be reached. Thus, given this gap in the knowledge, we assessed the results from another protocol.

Smell performance in COVID-19 patients presenting mild or no symptoms may not be fully recovered after 4 months or more, especially regarding specific odors.[3] It can be explained by local mechanisms in which the olfactory neuroepithelium cells are affected, resulting in inflammatory changes that reduce olfactory receptor neuron function, induce olfactory receptor neuron damage, and impair subsequent

neurogenesis. It has also been speculated that the virus may enter different regions of the brain via the olfactory bulb, affecting olfactory function.[4]
In this sense, the use of intranasal PBMT for olfactory impairment in COVID-19 patients would offer beneficial effects based on both local (modulation of inflammatory processes and improvement of tissue vascularization)[5] and systemic events (through blood cells and components, leading to neuroprotection via anti-inflammatory and antioxidant pathways and activation of neural stem cells of the olfactory nerve, bulb, and endothelium, and the autonomic nervous and lymphatic systems).[6]

Conclusion

According to the current case, adjuvant PBMT seems to be of value in the management of COVID-19 olfactory impairment.

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Figure 1. Intranasal application of photobiomodulation therapy.