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LETTER TO THE EDITOR

High-power laser and its implications in covid-19 season

Dear editor,

The dental community was forced to adapt to a new reality and seek new protocols that promote greater safety in care due to the pandemic of coronavirus disease 2019 (COVID-19) caused by acute acute respiratory syndrome severe coronavirus 2 (SARS-CoV-2). The main form of SARS-CoV-2 contagion occurs through respiratory droplets or contact transmission. However, there may be other routes of transmission of the disease, such as by means of aerosol particles.[1,2]

In this context, dental professionals have paramount importance in the control and prevention of this infection, as they deal in close relationship with the bucco and nasophayngeal area and work with equipment that produces aerosol, such as high-speed turbines, ultrasonic scrapers and air/water syringes.[1] Due to these aerosols, the average microbial load suspended in the air increases more than three times during dental procedures, compared to the previous period of the beginning of treatment.[3] These airborne particles, during and after procedures, can enter through the respiratory tract and connective membranes of the dentist, his assistants and patients, increasing the risk of COVID-19[1,4,2] contagion and when dispersed throughout the environment they can settle on surfaces up to 2 m away, as presented in the work of Miller and Micik.[4]

In view of this scenario, it is important to emphasize the use of high-intensity laser therapy (HILT) which in dental procedures has several applications, such as endodontic treatments, root decontamination, treatment and prevention of dental caries, bone and soft tissue surgeries and may present air/water spray as a cooling system and thus produce aerosol.[2,5] Some HILT do not have a refrigeration system, however[5], as presented in a pilot study conducted by Lopez et al (2015), due to the increase in temperature generated in target cells, to the point of causing rupture of membranes, as well as pyrolysis and combustion, there is the formation of spray or ablation plume.[5] The analysis in research of the composition of this released material showed the presence of viral, fungal and bacterial agents.[6] In addition, the quantity and characteristic of vaporized cellular matter is determined by the type of laser used, the dose used and the type of tissue to be treated.[6–8]

The HILT is considered a viable alternative in the search for less traumatic procedures that seek ways to replace high and low rotational instruments as a way to reduce the discomfort caused by vibration, noise and pressure of these equipments.[9,10] However, information regarding hilt vaporized material, such as dispersion distance, particle size, chemical and biological composition, is still scarce. Because there is inadequate knowledge, the most common biosafety methods can sometimes prove insufficient. The reality of the COVID-19 pandemic has brought the need for strategic rethinking to reduce contamination of the dental environment, since the professionals involved are groups at high risk of contagion. Therefore, it is necessary for the office to be a safe environment for both the professional and the patient and be prepared to prevent cross-infections.

Furthermore, further research is needed on the infectious load suspended in the air caused by HILT as well as its dispersion, so that it is possible to evaluate whether more effective protection and prevention measures are necessary. In addition, studies comparing the spread of contaminants by the high-speed turbine and HILT may be important to contribute to the choice of a safer instrument to be used in this new scenario.

KEYWORDS

COVID-19, laser, SARS CoV-2, transmission

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest.

AUTHOR CONTRIBUTIONS

Conceptualization: AKL Azevedo, ABS Menezes and AMS Nascimento; Writing – original draft preparation: AKL Azevedo and AMS Nascimento: Writing – review & editing: AMS Nascimento.

Allen Matheus da Silva Nascimento[1]
Anne Karollyne Lima de Azevedo[2]
Ana Beatriz de Sousa Menezes[2]

[1]*Department of Biosciences, Piracicaba Dental School, University of Campinas, Piracicaba, SP, Brazil*
[2]*Department of Dentistry, Federal University of Sergipe, Aracaju, SE, Brazil*

Correspondence
Allen Matheus da Silva Nascimento, Department of Biosciences, Piracicaba Dental School, University of Campinas, 901 Limeira Avenue, 13414-903 Piracibaba, SP, Brazil.
Email: allenmatheus22@gmail.com

ORCID

Allen Matheus da Silva Nascimento https://orcid.org/0000-0001-6343-6408

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