

*According to a multinational study, with Spanish participation*

## **Periodontitis patients are 9 times more likely to die if they suffer from COVID-19**

*\* In addition, they are 4 times more likely to need assisted ventilation and approximately 3.5 times more likely to enter an ICU*

*\* They record especially high blood levels of inflammatory markers related to worse outcomes of COVID-19*

*\* Preventive and therapeutic measures are required to reduce the global burden of periodontitis*

*\* The study is the result of a collaboration between the Universidad Complutense de Madrid, McGill University in Montreal, and Qatar University*

*\* The study was published in the Journal of Clinical Periodontology, the journal of reference worldwide in the field of Periodontology*

**February 3.-** Until now there was no evidence that people with periodontitis who had been infected by SARS-CoV-2 and that developed COVID-19 had a greater chance of having worse outcomes. However, a study published in the "[Journal of Clinical Periodontology](#)", the journal with the biggest impact for the scientific dental community, reveals that periodontitis is significantly associated with an increased risk of complications from COVID-19, including admission to the Intensive Care (ICU) or the need for assisted ventilation, and even the most severe consequences, including death.

The study was carried out between March and July 2020 with data from the national electronic medical records in Qatar, and included 568 patients with COVID-19. *"The result of this research has shown that periodontitis is significantly associated with the severity of the COVID-19 disease and with development of complications; therefore, patients with periodontal pathologies should consult their dentist to obtain the appropriate diagnosis and treatment, and thus reduce the risk of complications if they become infected with the SARS-CoV-2 virus,"* according to **Professor Mariano Sanz**, one of the coordinators of the study and the co-director of the ETEP Research Group (Etiology and Therapeutics of Periodontal Diseases) at the Universidad Complutense de Madrid.

For Dr. Sanz, an honorary trustee of the Spanish Society of Periodontology's SEPA Foundation, *"periodontal diseases, and mainly periodontitis, have shown that they act as a complementary factor in increasing the severity of infection of the COVID-19 disease, which highlights once again the need to implement preventive and therapeutic measures to reduce the global burden of periodontitis."*

### **Study of reference**

Although there had already been previous data on the possible association between periodontitis and the severity of COVID-19 infections, the findings of this observational study

are especially compelling. The study is the result of a collaboration between Dr. Sanz and researchers from McGill University in Montreal, and Qatar University, led by **Professor Faleh Tamimi** with the collaboration of experts from the Institute of Oral Health at the Hamad Medical Corporation in Doha.

After adjusting for other factors, the study indicates that periodontitis was significantly associated with death (odds ratio (OR) = 11.17), assisted ventilation (OR = 4.03), and ICU admission (OR = 3.57), compared to controls. This means, as Dr. Sanz emphasizes, that *“patients with periodontitis are approximately 11 times more likely to die, 4 times more likely to need assisted ventilation, and approximately 3.5 times more likely to enter an ICU if they are infected with COVID-19.”*

Likewise, this study shows that people with periodontitis show a significantly higher blood level of markers, such as D-dimer, white blood cell count, and C-reactive protein, that are related to worse COVID-19 outcomes. This, according to those responsible for the study, means that patients with periodontitis have a greater probability of developing an abnormal immune and inflammatory response, the so-called *“cytokine storm”* responsible for the rapid deterioration of many patients with COVID-19.

### **Impact on hospitalization and need for ventilation**

In addition to the relevance of these results, together with Dr. Sanz, the SEPA Foundation’s scientific coordinator, **Miguel Carasol**, recalls that *“periodontitis is closely related to pneumonia in patients who are hospitalized or who are in need of assisted ventilation.”* This association is mainly due to the breathing in of bacterial pathogens that reside in the oral cavity (mainly within the periodontal pockets) in patients with periodontitis; once these pathogens are breathed in, and given the lack of adequate defenses in the host, the colonization of these pathogens in the lungs is promoted, which in turn rapidly deteriorates the patient's health status.

Given that the presence of bilateral pneumonia and the need for assisted ventilation are key indicators of COVID-19 deterioration and an increased risk of death, Miguel Carasol highlights that *“there is a clear need not only to pay close attention to oral hygiene and the administration of oral antiseptics in hospital settings to reduce this possible oropharyngeal colonization, but also to diagnose and treat patients with periodontitis before they end up in the hospital.”*

All of this evidence, in the words of SEPA president, **Antonio Bujaldón**, *“is especially important if one takes into account the high number of people who currently have periodontitis in our country, which in many cases are undiagnosed.”* The latest Oral Health Survey in Spain (2020) indicates that between 25 and 34% of adults have periodontal pockets, with the condition being severe in 8% of young adults and 12% of older adults.

### **Oral health and transmission / pathogenicity of SARS-CoV-2**

This study joins the growing number of trials trying to shed light on the role of the oral cavity in the transmission and pathogenicity of SARS-CoV-2.

Currently, it is known that the level of infection of SARS-CoV-2 depends on its ability to penetrate cells, using the angiotensin-converting enzyme 2 (ACE-2) as the main receptor and the virus's gateway into the cell. Since the epithelial cells in different mucous membranes of the oral cavity show a high expression of ACE-2, and since the oral cavity is one of the first points of contact between the exterior and interior of the body, there is a high likelihood that this route of colonization and viral infection is a determining factor for the appearance of COVID-19.

According to Universidad Complutense researcher **David Herrera**, *“this fact has clear implications for the implementation of measures to prevent viral colonization in the oral cavity, not only in terms of physical barriers (masks, screens, etc.), but in the identification of effective oral antiseptics that can reduce the transmission and pathogenicity of this virus.”*

Recent in vitro and in vivo research has shown that cetylpyridinium chloride and / or povidone-iodine-based mouthwashes have virucidal properties and can help prevent COVID-19 infection, although *“we need clinical trials to verify this hypothesis,”* warns Professor Herrera, co-director of the ETEP Research Group and former president of SEPA.

The Spanish Society of Periodontology (SEPA) will present these and other important advances on April 15 at the II COVID-19 Multidisciplinary Congress, which will take place from April 12 to 16, 2021, in which 60 scientific societies will participate.

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