Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Letter to the editor

Oral cancer and ACE2 receptor of SARS-CoV-2

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Letter to the Editor

Severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) has provoked an intense mobilization of scientists worldwide, generating an expressive amount of information about the coronavirus-induced disease (COVID-19). However, we still know very little about the consequences of virus at long time health of people who contact it and recover (https://www.who.int/emergencies/diseases/novel-coronavirus-2019). While COVID-19 mortality and morbidity are associated with respiratory and cardiovascular complications, oral manifestations have been described in SARS-CoV-2-positive patients [1], with dysgeusia being the main oral clinical manifestation of COVID-19 [2]. The dysgeusia-causing mechanism is probably related to the SARS-CoV-2 ability to bind to the ACE2 receptor, a component of the renin-angiotensin system (RAS), that is broadly expressed in the tongue surface and in the oral cavity. Thus, the oral cavity can act as a gateway to infection [3]. Furthermore, RAS components have been associated with oral squamous cell carcinoma (OSCC), and here we highlight a putative biological effect of SARS-CoV-2 on oral cancer.

OSCC, the most common malignancy of the oral cavity, is the result of activation and dysregulation of biological processes trigged by complex interplay among environmental factors, epigenetic alterations and genetic variations [4]. The association of ACE2 and OSCC goes beyond the high expression found in mouth. The overexpression of ACE2 was associated with OSCC progression and worse prognosis [5]. Moreover, ACE2 plays an essential role converting angiotensin II (AngII), which binds to its type 1 receptor (AGTR2) and promotes proliferation and invasion of OSCC cells or binds to its type 2 receptor (AGTR2) and induces anti-apoptotic and anti-oxidative stress phenotypes [6]. Interestingly, Ang II is capable to promoting the invasion and migration of OSCC cells in an autocrine manner and by triggering stromal tumor-paracrine interactions mediated by its receptors [7]. One recent study revealed that tobacco smoking, a consistent risk factor for OSCC, increases the expression of ACE2 receptor [8]. Although this appears to act as a protective mechanism against the progression of the tumor [9], the detrimental effects of tobacco, along with the entry of SARS-CoV-2 in the epithelial cells, could be increased.

Given that SARS-CoV-2 uses ACE2 receptors to obtain access to its target cells and, once inside the cells, the virus explores the endogenous cellular transcriptional machine to replicate and spread, and the overexpression of ACE2 and its receptors are related to several aspects of oral carcinogenesis, it is possible that this whole process influence oral cancer development and progression. This pandemic must teach us several lessons and the possible relationship between OSCC and SARS-CoV-2 needs to be further investigate.

Authors'contributions

H. Martelli-Junior and R.A. Machado contributed to conception, design, data acquisition and interpretation, drafted and critically revised the manuscript. D.R.B. Martelli, M.C. Andrade and R.D. Coletta contributed to conception, design, data acquisition and interpretation and critically revised the manuscript. All authors gave their final approval and agree to be accountable for all aspects of the work.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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