PERMANYER

LETTER TO THE EDITOR

Hypersaline antiseptic therapy to prevent progression of COVID-19: a proposal

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SARS-CoV-2 placed us in the urgent challenge of reducing morbidity, mortality, and the effective reproduction number (R), all highly worrying aspects of the COVID-19 pandemic. Bearing in mind that the treatments tested, at best, only achieved a partial effect, there is no vaccine against the disease available for everybody, and the eventual outbreak of virus variants could result in enhanced morbidity, there have been concerns raised as to the global impact of the pandemic, which makes reasonable to expand prevention measures. External protections, including antiseptic measures, are highly recommended. Considering early signs of infection—including sore throat, taste loss, dry mouth, and mucosal lesions such as ulcerations, enanthema, and macules are habitual symptoms of the disease, indicative that the virus makes an early season in these locations, it is logical to explore the possibility of using a local spray antiseptic compatible with COVID-19 at the beginning of the signs and symptoms.

It was reported that the median viral load in posterior oropharyngeal saliva was 5·2 log10 copies per mL[1]. Salivary viral load was highest during the first week after symptoms onset and subsequently declined with time. The patients were seropositive for anti-NP IgG, anti-NP IgM, anti-RBD IgG, and anti-RBD IgM, while anti-SARS-CoV-2-NP or anti-SARS-CoV-2-RBD IgG levels correlated with virus neutralization titer ($R2>0·9$). Older age was correlated with higher viral load[1]. Examining the role of the oral cavity in SARS-CoV-2 infection has found evidence that the virus infects cells in the mouth (the number of angiotensin-converting enzyme receptors is greater in the salivary glands compared to the lungs), which could explain why some patients with COVID-19 experience taste loss, dry mouth and blistering. The study also confirmed that the saliva is infectious, indicating the mouth may play a part in transmitting the virus deeper into the body or to others, as salivary droplets represent the most relevant transmission route[2]. This role for the oral cavity in SARS-CoV-2 infection obviously justifies an oropharyngeal antiseptic treatment from the initial signs and symptoms of COVID-19.

The scientific literature found that a hypersaline NaCl solution could potentially be an antiseptic against COVID-19.

In vitro studies reported that hypersaline solutions also inhibit SARS-CoV-2[3].

1) Through virus inactivation, in these studies, before the pandemic that affects us, it was reported that NaCl could function as an antiseptic and, on the other hand, promote the immune response against the virus. These actions have been associated with interference with Na and Cl channels, whose normal operation is a necessary condition for the virus's life cycle. Interference with ion channels is considered of high potential against viruses.

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Date of reception: 21-09-2021
Date of acceptance: 01-12-2021
DOI: 10.24875/RMU.21000045
Available online: 18-03-2022
Medicina Universitaria. 2022;24(1):31-32
www.medicinauniversitaria.org

2) A clinical trial has shown that a hypersaline solution applied to the rhinopharyngeal area of patients with flu symptoms produced by different viruses, including a coronavirus, has resulted in a significant shortening of the disease as well as a reduction/improvement in the symptomatology of patients[4]. Taken altogether, these and other studies, although carried out for other viruses, allow us to propose the hypothesis that hypersaline NaCl preparations can have an antiseptic effect on the oropharyngeal region, deactivating SARS-CoV-2 and reducing viral transmission. Commercial oral antiseptics have also been suggested to be of potential value against COVID-19 infection[5]. A hypersaline solution prepared with common NaCl salt and tap water could be available everywhere, with practically no cost or effort for distribution, administered to individuals or in a broader health plan to people at high risk in order to limit the spread and progression of COVID-19.

At a time when more than 200.000.000 people have had COVID-19, it is meaningful to highlight the dreadful conditions that vulnerable people endure, very probably with little chance for medical assistance. Thus, for local use of antiseptic therapies to prevent disease progression, we must prioritize a very low-cost, low-tech solution, reasonably innocuous and easy to prepare and administer even in the most adverse economic and social conditions. A teaspoon with 2.5 g sodium chloride (NaCl, common kitchen salt) is added to tap water in half a cup of coffee (50 mL), resulting in a 5 % saline solution, which can be dispersed several times per day inside the nose and mouth with a spray, a nasal sprinkler, or a simple dropper.

This antiseptic treatment may be recommended to patients regardless of their geographical location and adverse social conditions, and eventually as a prevention strategy for personnel highly exposed to SARS-CoV-2. Hypertensive patients or those on a low sodium diet should be excluded from this hypersaline treatment. In conclusion, although there is *in vitro* and some *in vivo* evidence to support the use of hypersaline solutions as an antiseptic to potentially reduce the viral load of SARS-CoV-2[6], randomized clinical trials with a control group are needed to demonstrate its clinical efficacy[7].

Funding

The authors declare no funding. This study was supported by Fundación PROSAMA, Buenos Aires, Argentina, Project COVID-19.

Conflicts of interest

The authors declare no conflicts of interest.

Ethical responsibilities

Protection of people and animals. The authors declare that there were no experiments conducted on human beings or animals for this research.

Data confidentiality. The authors declare to have followed all protocols from their wor center on patient data publication.

Right of privacy and informed consent. The authors declare that in this article, there is no data from any patient.

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