

Effective Nasal Disinfection as an Overlooked Strategy in Our Fight against COVID-19

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Abstract

Although the recent advent of a vaccine and other therapeutic aids in our fight against COVID-19 has brought us a step closer to controlling the pandemic, our fight is far from over. Handwashing, masks, and social distancing practices are considered reasonable measures to control the spread of the disease have been well accepted by government officials and public health officials despite scarce and conflicting scientific evidence. Taking into consideration the aforementioned measures, there is an additional perhaps overlooked practice that warrants our attention—nasal disinfection and hygiene.

Keywords

nasal sprays, disinfection, COVID-19, virucidal, anti-viral

Nearly 200 years ago a Hungarian physician deduced that in the hospital he was offering his services, the high rate of women dying with postpartum infections was caused by doctors coming straight from autopsies without washing their hands.¹ Ignaz Semmelweis did not conduct a randomized controlled trial but rather used his clinical reasoning and anecdotal experience—a scientific observation. Semmelweis strict handwashing policies quickly brought down the mortality rate in the maternity ward from 25% to 30% to less than 1%, but the wider medical establishment rejected his discovery, scoffing at him as unscientific.¹ It took 150 years for his unprecedented proposal to gain acceptance as the standard of care in hospitals. Today, there is a similar situation, albeit on a global scale, with the coronavirus disease 2019 (COVID-19). Although the recent advent of a vaccine and other therapeutic aids in our fight against COVID-19 has brought us a step closer to controlling the pandemic, our fight is far from over. Handwashing, masks, and social distancing practices are considered reasonable measures to control the spread of the disease have been well accepted by government officials and public health officials despite scarce and conflicting scientific evidence.²

Taking into consideration the aforementioned measures, there is an additional perhaps overlooked practice that warrants our attention—effective nasal disinfection.³ As a simple and obvious yet potentially powerful tool in our medical arsenal, the addition of appropriate nasal disinfection practices might be another turning point in our fight against COVID-19. It is worth

mentioning that the nasal epithelium cells have the highest percentage of angiotensin-converting enzyme 2 receptor (ACE2) which is the portal of entry of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).⁴ Since the nasal epithelium cells have the highest percentage of ACE2 expressing ciliate cells in the proximal airways, it is plausible to suggest that the addition of nasal disinfection practices including using nasal sprays might be optimal candidates for providing effective preventive and therapeutic modalities against COVID-19. Moreover, it is known that 90% of SARS-CoV-2 is in a patient's nose, which is then the point of entry for the lungs where the severe potentially lethal manifestations of the disease occur.⁴ Therefore, adding a simple practice of disinfecting the nose with agents displaying anti-viral (preventing the virus from attaching to the cells lining the nose) and virucidal (deactivating the viruses) activities could simply add potential benefits with negligible risk. Fortunately, teams all over the world have been developing such solutions with the

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Received: February 20, 2021; revised: February 20, 2021; accepted: February 23, 2021

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potential to improve the effectiveness of nasal disinfection for years. Some of the recent discoveries include the investigation and use of nasal spray solutions with clinical promise, both in vitro and in vivo, including iodine, griffithsin, algae extract, lipid-conjugated peptide, synthetic toll-like receptor 2/6 agonist (INNA-051), grapefruit seed extract with xylitol, and chlorpheniramine maleate.⁵⁻¹⁰ It is worth mentioning that the aforementioned substances have shown the ability to deactivate viral particles, and hence may have important benefits in the control of viral load engagement, load, and shedding, an effect that is not apparent with simple saline irrigations.¹¹

Interestingly, government regulatory agencies and the scientific community are requesting multiple randomized clinical trials to support nasal disinfection including the use of nasal sprays in our fight against COVID-19 despite some of these formulations having over 20 years of use.⁹ The stakes are high, but the fact is nasal disinfection is a safe cost-effective practice that with the addition of anti-viral and virucidal solutions should give us an additional edge in our fight to control the COVID-19 pandemic. Government officials are reluctant to endorse nasal disinfection practices until there are randomized controlled trials, which could take months. If we consider that current COVID-19 vaccines have been slowly distributed besides the not clear effectiveness in stopping the spread of SARS-CoV-2, the inclusion of nasal disinfection is desperately needed.

Women were dying on Semmelweis' ward, a horrendous death from childbed fever. Semmelweis could not wait; his mission was "to preserve the wife for her husband and the mother for her child." Nor can we wait. Clinical reasoning dictates as we have a simple way to eliminate and control the virus in the most susceptible area of infection—the nose. Many nasal sprays for improving nasal disinfection with virucidal and antiviral properties are available now over the counter. When the risks are extremely low and the potential benefits are enormous, why not recommend improving nasal disinfection and hygiene urgently along with masks and handwashing? The addition of effective nasal disinfection strategies with substances capable of reducing viral engagement, load, and shedding might well be one of the best practices to turn the fight against COVID-19 in our favor for good.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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