

Reflection on a Breathing Technique "Nose-mouth-nose". Can it Save Lives?

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Abstract

This is a breathing technique, which consists of inhaling air we exhale, CO₂-enriched air. We create a camera with our hands, for inhaling through the nose, the air exhaled through the mouth. When practicing this technique, due to its mucolytic effect, we avoid the use of nasal decongestants in colds. On the other hand, the viral load in the nostrils can decrease, by the action of nitric oxide, generated in the sinuses, and the mucolytic effect of exhaled air enriched with CO₂. The anti-viricidal properties of CO₂, can explain these results. Can this breathing technique be used as a nasal decongestant, preventing viral respiratory infections? The article "Can Influenza viruses be inactivated by a nose-mouth-nose breathing technique?" was published in July 2020. This manuscript was based on the practice of the technique, by me and some patients, when feeling symptoms such as nasal obstruction, cough, and sneezing. When practicing the technique, we did not develop flu symptoms and, if they appeared, the symptomatology was very few days. They solve their own colds, practicing the technique. Before the pandemic began, we were a few people who practiced it, now we are more and, until now, those who have done it correctly, have not been infected. Of course, we have followed each of the indicated health guidelines to prevent the spread of the virus, including vaccination, since it is not possible to demonstrate, that the technique prevents infection by SARS-CoV-2. The clinical case reported, should make us reflect on the usefulness of the technique. A man of 83 years, who practiced and practices this breathing technique, with the third dose of vaccination, suffers from bacterial pneumonia at the peak of the sixth wave of the pandemic.

Keywords: Pneumonia; Obstruction Nasal; Nasal Decongestants; Virus; Upper Respiratory Tract

Introduction

Nine years ago, I introduced a breathing technique to decongest the nasal passages in colds and prevent the use of nasal decongestants. I reported the possibility that, it could also inactivate flu viruses (Conference: 20th IFOS WORLD CONGRESS, June 2013, Seoul, Korea) [1]. I relied on the improvement of catarrhal symptoms when practicing the technique, which made unnecessary the use of nasal decongestants and flu drugs. Also, those who practice it correctly, do not have colds or, in the case of suffering a cold, it is for a day.

I was struck by a report from the World Health Organization on: Instructions for storage and transport of samples of human

and animal cases and suspected or confirmed isolates of influenza A (H₁N₁). Date Posted: May 20, 2009. I emphasize this paragraph:

"Specimens should be collected and transported in a suitable transport medium, on ice or in liquid nitrogen. Specimens collected for influenza virus isolation should not be stored or shipped in dry ice (solid carbon dioxide) unless they are perfectly sealed in glass or sealed, taped and double plastic bagged. Carbon dioxide can rapidly inactivate influenza viruses if it gains access to the specimens through imperfect seals: microscopic leaks in the seal may allow carbon dioxide gas to penetrate the primary container as a vacuum is created during freezing".

The air we exhale contains carbon dioxide. Could carbon dioxide in exhaled air, re-inhaled, inactivate respiratory viruses? I am aware of the controversy raised by the question, however, with the description of this clinical case, I intend to generate a reflection on the usefulness of this respiratory technique. I have no doubt about the decongestant effect of the technique, in the nostrils, when doing so, the use of nasal decongestants is not necessary. Ephedrine and pseudoephedrine are highly efficient amines for relief of nasal congestion. As with any vasoconstrictor and as underscored by the French Society of Otorhinolaryngology in its 2011 guideline, these molecules should not be used in patients under the age of 15. Furthermore, due to unpredictable severe cardiovascular and neurological adverse events that may occur even at low dose and in the absence of any pre-existing pathology, they should not be prescribed for the common cold, and ENT physicians must carefully weigh the risk/benefit ratio in patients with allergic rhinitis [2]. The emergence of the SARS-CoV-2 pandemic made me recommend the technique to all my patients. They should do it with the first symptom of a cold, such as sneezing, coughing, or nasal obstruction. I do not know the exact number of patients who have practiced it, because I saw their faces and perceived disbelief in their eyes. I was aware that, even if they paid attention, many would not practice it. Those who have practiced it correctly, we have not developed severe symptoms of infection by SARS-CoV-2, in all this time of pandemic. Physiology can explain the decongestant and antiviral effect of the technique, in the nostrils.

1^o/Carbon dioxide gas is an antiviral, antibacterial, and anti-infection agent effective not only on solid surfaces but also in aqueous solutions and water treatment settings [3]. The composition of the inspired air is different from that of the exhaled air, with the following standard values for respiratory gases (Gillian Pocock, 2013) [4]:

- A/Inspired air: O₂ (21%); CO₂ (0,04%); N₂ (78%); Argon (0.9%); Water (0.0%).
- B/Expired air: O₂ (16%); CO₂ (4%); N₂ (78%); Argon (0.9%); Water (4%).

The air we breathe out (exhaled air), contains about 100 times more carbon dioxide concentration, more water vapor, and less oxygen. I recommend the lecture of this paper "Humidified Warmed CO₂ Treatment Therapy Strategies Can Save Lives with Mitigation and Suppression of SARS-CoV-2 Infection: An Evidence Review" [5].

2^o/The physiology of the autonomic nervous system, helps us to understand the decongestant effect on the nostrils: General innervation to the nose involves the autonomic nervous system, the parasympathetic and sympathetic nerves. The glands of the nasal mucosa, as well as the vessels, have a direct parasympathetic innervation, which leads to a direct parasympathetic increase in nasal secretions via transudation and exudation [6]. There are physiological mechanisms are partially controlled by neural regulation. Besides classic neurotransmitter neuropeptides such as VIP, CGRP, SP and NPY [7]. Parasympathetic neurons mainly have a vaso-intestinal peptide (VIP) as co-transmitter to acetylcholine [8]. VIP stimulates secretions (more serious than mucous) and vasodilation in the arterial and sinusoidal vessels [9]. Sympathetic neurons contain the neuropeptide Y (NPY) as a key co-transmitter for noradrenalin and predominantly innervate arterioles and arteriovenous anastomoses. Release of NPY results in prolonged vasoconstriction, along with decongestion of the venous sinus vessels [10]. The activation of the sympathetic nerves leads to a decrease in blood flow and a remarkable vasoconstriction, and the activation of the parasympathetic nerves leads to an increase in blood flow and a remarkable vasodilation. Stimulation also occurs during each cycle of breathing. Inhalation stimulates sympathetic activity and exhalation stimulates parasympathetic activity. Nasal breathing can alter metabolism and autonomic activities. This increase in metabolism may be due to increased sympathetic discharge in the adrenal medulla [11]. Carbon dioxide activates the sympathetic tone, thus increasing adrenaline levels. Stimulation of the sympathetic system decreases nasal congestion and discharge. It is suggested that both sympathetic and parasympathetic components, play a role in alternating symptoms of unilateral nasal obstruction. Both sympathetic and parasympathetic components are suggested to play a role in alternating unilateral nasal obstruction symptoms [12].

For patients to better understand the benefits of the technique, I use the following explanation: "When you become infected with a respiratory virus, you will not develop symptoms immediately, but hours later. This occurs because the viral load needs time for growing at the nasal mucosa. There is an inflammatory response to the viral load, the nasal mucosa thickens causing nasal obstruction and, probably, sneezing. I think the first symptom of contagion is a sneeze, but the patient always attributes it to an allergic cause, he is asymptomatic. As the viral load increases, catarrhal symptoms will

appear. I recommend doing the technique, every time you sneeze, for about 30-60 seconds, to decrease the viral load. In addition, doing so will prevent the spread of viruses by sneezing. This alone would justify the practice of the technique as a hygienic measure because you, probably, won't have time to take the handkerchief out of your pocket, to cover your mouth and nose when you sneeze. Just wash your hands after sneezing. Could the viruses be deactivated? Rhinorrhea and nasal obstruction have been described; however, more recently sudden onset of olfactory and gustatory dysfunction has been described in up to 85.6% and 98% of patients with COVID-19, respectively [13-17]. The pathophysiological hypothesis of this technique lies in the mucolytic and, probably, antiviral effect of CO₂ and nitric oxide on the nasal and tracheal mucosa. Nitric oxide in the upper zone pathway plays a crucial role in the defense against infection [18]. Thus, we exhale air with CO₂, which remains for a few seconds, in the chamber created with our hands, and with a deep inspiration, we inhale it th O₂ (Figure 1).

Figure 1: We inhale air enriched with CO₂ and stimulates NO in sinuses.

How should you do this breathing technique?

This is very simple (Figure 2-3).

Figure 2: The nasal breathing technique using the left hand.

Figure 3: The nasal breathing technique using the right hand.

A-B/Touch the palm of your hand with the chin.

C/We put our fingers together, in contact with the tip of the nose. to create a cavity that collects the air we exhale.

D/We grab the fingers of the hand that contacts with the tip of the nose, and joining them, we avoid air leaks exhaled, between the fingers.

We have created a nasal mask with the hands, to be used when sneezing, or have symptoms of nasal obstruction. As can be seen, it is like a respiratory mask (Figure 4). Now, we just have to inhale the air, exhale it and inhale it again, for about 45-60 seconds. This should be repeated until, in the case of nasal obstruction, symptoms disappear and only once, for about 30-45 seconds, when sneezing. To not get tired, you should rest about 30 seconds, after performing the technique and start again. We will not notice at the beginning, as we repeat the technique, we will feel that each time, we breathe better than the previous one. The nostrils are unclogging. When we do it because we cough, in this case, it is necessary to do it for about 3-4 minutes in a row, resting for about 30 seconds and continuing to do it, about three-four times. The cough goes away, but it will come back, and we will repeat the technique. The explanation could be in the lysis of the mucus in the upper airways, and the mucus is what makes us cough.

Figure 4: A nasal mask.

To encourage them to do the technique, I tell patients that they will cure their own colds.

Nine years ago, I presented in the World congress of Rhinology in Seoul, June 2013, "Nasal breathing technique in nasal airway obstruction. Viral infections in upper respiratory tract" [1]. This technique prevents the use of nasal decongestants in the cold. I also hypothesized the possibility that I could inactivate influenza viruses, based on clinical evidence of the absence of colds, in those who practice it correctly. If you practice it, with established catarrhal symptoms, the cold will last fewer days. There were very few of us who practiced it, about eleven patients, including me. Two years after the start of the SARS-CoV-2 pandemic, more patients are those who practice it and I have not observed contagion in those who have practiced it correctly. Obviously, we can attribute it to the patient's immunity from vaccination, but it is no less true that, many vaccinated have been infected. I recommend that everyone be vaccinated because, although I believe that it could act as a barrier against respiratory viruses, it is not possible to demonstrate its effectiveness. I had to look for a pathophysiological explanation for the decongestant effect on the nostrils, and I found it in the actions of the sympathetic and parasympathetic system [11]. I recommend reading these interesting articles [19-21]. The description of this case, an elderly patient who has been practicing for years, and practices the breathing technique, suffered a bacterial pneumonia by SARS-CoV-2, at the peak of the sixth wave, satisfactorily resolved with antibiotic therapy.

Reporting from a clinical case

A 83-years-old male with the following diseases: ischemic heart disease with a triple aorto-coronary bypass, diabetes mellitus type 2 insulin dependent, arterial hypertension, heart failure II NYHA. Two years ago, he was diagnosed from high-risk prostate adenocarcinoma, Gleason-8. Prosthesis on both hips and knees. Anticoagulation by atrial fibrillation.

Due to age and his diseases, in the case of being infected with SARS-CoV-2, the probability of having a serious problem was very high.

The patient was admitted to the hospital due to symptoms of progressive dyspnea and cough. He said that a week ago, he started with a cold, with progressive worsening, cough with greenish expectoration and occasionally, hemoptoic sputum. No fever. No

chills. Progressive dyspnea of small-moderate efforts, with oedemas in lower limbs. The patient suffered decompensated heart failure from an infection, evidenced by 1- Increased plasma levels of concentration of NT-proBNP (4899). 2- X-ray: Right basal radiopacity compatible with pneumonia. 3- Blood test indicated community-acquired bacterial pneumonia, evidenced by neutrophilic leukocytosis, normalized 24 hours after antibiotic treatment. 4- Microbiology: SARS-CoV-2 serology and negative PCR tests; influenza virus negative tests; respiratory syncytial virus negative tests. The patient was admitted to the hospital on 11-17-2021 and, 4 days later, is discharged. Two and a half months later, there is a radiological resolution of the pneumonic process, with decreased cardiomegaly (Figure 5).

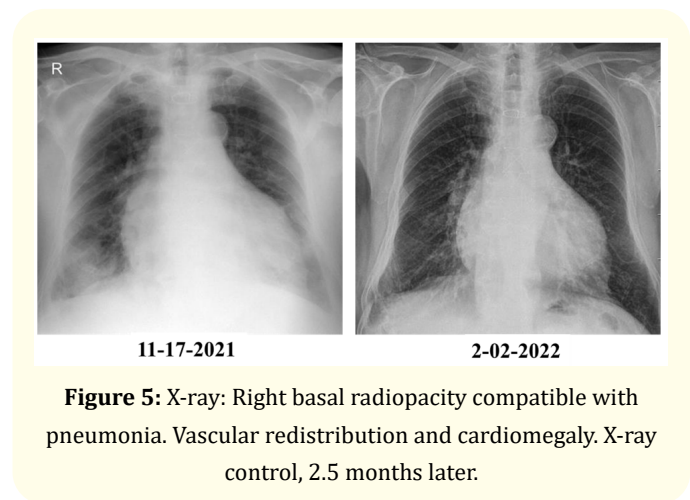


Figure 5: X-ray: Right basal radiopacity compatible with pneumonia. Vascular redistribution and cardiomegaly. X-ray control, 2.5 months later.

Discussion and Conclusion

It seems an irrelevant case in clinical practice, however, what stands out is the rapid response to the antibiotic and the improvement of heart failure with diuretic therapy. He was only hospitalized for 4 days, and performed the breathing technique, in these days. Really, I can only verify the correct practice of the technique, in myself and in a few patients, that we have been doing, for years. This patient is one of them. When I admitted him to the hospital, by the patient's risk factors, my fear was that he might have SARS-CoV-2 pneumonia. Fortunately, that did not happen. We can think that it was due, to having all three doses of vaccination, however, many others with full vaccination, have been infected. I am sure the technique can cause perplexity and disbelief, but the decongestant effect on the nostrils, can be checked, when performing the technique correctly. I would like to reiterate that, the first time we

will not feel any improvement, but every time we repeat it, we will breathe better, when the nostrils are unclogging. I am convinced of the mucolytic and virucidal effect of the technique, so I recommend it to all patients, in addition to being vaccinated. On the other hand, I believe that the first symptom of a contagion is a sneeze, but it is not possible to differentiate it from an allergic cause and, probably, most of the time, it is like this. Every time we sneeze, I recommend doing the technique for a minimum period of 30 seconds.

This article is based on personal experience, of which I have informed my patients, so that those who consider it useful, use it. There is so much to gain, and so little to lose.

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