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POSSIBLE ROLE OF JALANETI IN CORONA VIRUS DISEASE- A REVIEW ARTICLE

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ABSTRACT

Noval corona virus disease (COVID-19) is highly contagious infectious as asymptomatic patients can shed the virus and spread the infection. The current emphasis is on preventive strategies such as social distancing, face mask, and hand washing. In series of prevention and progression of disease, jalaneti may play a significant role. Jala neti is an old and well-documented practice originating in ancient India for taking care of the upper respiratory tract. It is a relatively common and beneficial method for maintaining nasal hygiene. It keeps nose moist as well as it flushes out the mucous and allergens. Hence, it augments clearance of the sinonasal cavity. *Jala Neti* with the help of lukewarm NaCl solution provides a continuous supply of Cl^- ions, which has a role in inhibiting viral replication.[1] Further research in the form of clinical trials are required to study the effect of Jala neti against COVID-19 infection in humans.

KEYWORDS: Noval corona virus, *Jalaneti*, Upper respiratory tract infection.

INTRODUCTION

In airborn diseases, the common target organs is lung which proves to be lethal if unchecked.[2] Relevant example in the current time is the COVID-19 pandemic that emerged in Wuhan, China caused by SARS-CoV-2 virus and now has entered into nearly all over the world.[3] The fore most point of entry of the novel coronavirus causing COVID-19 infection is the nostril and nasal passage. When the barriers in the nasal passages fail, the virus travels through the respiratory system and affects the type-2 alveolar cells of the lungs having ACE

receptors causing acute respiratory distress syndrome.[4] Therefore, the immune response to respiratory infection should be rapid and efficient.

COVID-19 infection spread mainly by respiratory droplets and close contacts. The macro and micro droplets generated during coughing and sneezing by symptomatic patients transmit the virus. Even asymptomatic patients and those before 48 hrs the onset of symptoms generates droplets and can spread the infection. These droplets, containing virus, can spread up to 1-2 m and deposit on surfaces where they can remain viable for days.[5] These droplets fall on the ground and remain infectious to an ahead host as contaminated fomites for a certain period of time. Viability of virus on surface may depends on favorable atmospheric conditions like temperature, airflow streams and humidity. A healthy person can acquires infection either by inhalation of these droplets or by touching surfaces contaminated by droplets and then touching the nose, mouth and eyes.[6]

After inhalation, microorganisms enter the respiratory tract, the first obstacles are from mechanical barriers to enter. Mucins of the mucociliary blanket lining the surface of the airways trap the microorganisms, which is further cleared by the ciliary movement. Microorganism which pass this barrier are then met by mediators such as lactoferrin, lysozyme and defensins when activated can lead to lysis of pathogens or their destruction with the help of inflammatory cells.[7] On the outer surface of SARS-CoV-2 possesses spikes made up of glycoprotein, which helps in attachment and entry of the virus to host cells, which are respiratory epithelial cells in the nasal cavity. SARS-CoV-2 binds up to the Angiotensin Converting Enzyme 2 (ACE2) receptor. This receptor –binding domain (RBD) loosely attaches the virus; therefore, the virus may infect multiple hosts.[8]

In a study done in Vietnam by Le et al regarding SARS-CoV-2 shedding by travelers found that virus shedding was detected from day 1 after illness onset continuing through day 19. They also observed that virus shedding was present in asymptomatic patient for up to 9 days. This may explain the high magnitude of the current covid19 outbreak.[9] If those infected with COVID-19 infection practiced nasal irrigation by jala neti, there may be some chances of reduction of viral shedding as evident by the loose attachment of the RBD part of virus with the receptor area in the nasal cavity.[9]

Nasal irrigation is well-practiced treatment for nasal and sinus pathologies since many years. In Ayurveda, it was referred to as "*jala neti*", which in Sanskrit literally means "nasal

cleansing".[10] It was recommended in Hatha Yoga texts as treatment for the common cold and has been in use in India and South-East Asia since time immemorial. By this technique, the irrigating solution flushes out the pathogens, allergens and debries through nasal cavity. Rabone et al in their study reported significant reduction in colds and sore throats amongst Australian wood-workers who practiced *jala neti* for a year.[11]

Procedure of *jalaneti*

Jala neti can be performed over a sink, a bowl kept on a table. First take 3gm of non-iodised salt and dissolve this in 500 ml of freshly boiled and cooled to a temperature suitable for pouring in the nose neither too hot nor too cold. It is recommended that the temperature of water should be same as the temperature of the tears. Place the nose cone of pot in to the right nostril, sealing it to the nostril with a slight pressure then open mouth and breathe gently through the mouth. You should not sniff, swallow, laugh, talk or have any movement of air through the nose when the water is flowing through.

To change other sides, blow out gently through both nostrils to clear water and mucus from the nose. It is important that you do not blow hard at this point or you will send water up in to the ear tubes and sinuses. All that is needed is a couple of slow, soft blows out in to the sink to remove the water in the nose. Do not pinch the nostrils to create extra force, or blow hard and vigorously.

Drying the nose properly, it is a very important part of the practice. For the drying of the nose, first bend forwards from the waist and hang the head down with the nose pointing towards the floor, letting any residual water drain from the nose for 10–20 seconds. After that point the nose towards the knees. Close one nostril at a time, gently breathe in the mouth and out the nose about ten times. Then stand up to do the same. First do ten breaths through both nostrils together, sniffing in and out moderately with a bit more stress on the exhalation. Then close off the right nostril with one finger and do ten rapid sniffing breaths through the left nostril only. Then do ten sniffing breaths through the right nostril only. At final step do ten breaths again through both nostrils together to dry the nostril.

Mechanism of action of *jalaneti*

The exact mechanism of action of jalaneti is not clearly established. The mucus lining of the nasal cavity is one of the body's first lines of defense against any pathogen. These pathogens are often entrapped in the mucus lining of the nasal cavities. Jalaneti has a fluidizing action

and helps clear thick nasal secretions. Previous studies have shown a mechanical intervention, where it causes mucus lining softening and dislodgement, and removal of inflammatory mediators like leukotrienes and prostaglandins, irrespective of the composition of the solution used.[12] This favours early resolution of upper respiratory tract infections.

The fact that chloride/halide salts inhibit viral replication was first reported in the 1960s.[13] Ramalingam et al provided laboratory evidence that non-myeloid cells, such as epithelial cells and fibroblasts, have an innate immune mechanism, which fires into action in the presence of sodium chloride, by producing hypochlorous acid (HOCl) from chloride ion (Cl-).[14] Hypochlorous acid, which is the active ingredient in bleach, has a known antiviral action and can inhibit both enveloped and non-enveloped viruses. Thus, by supplying chloride ions in the form of jalaneti, we can augment the action of hypochlorous acid. Isotonic solutions of Nacl were found to have an immediate and significant effect on reducing the microbial load, whereas hypertonic solutions had only a marginal effect. Also, concentrations of lysozymes and lactoferrins were found to be increased by 30%, 24 hours after nasal irrigation.[15]

CONCLUSION

Jala neti may be beneficial in a number of ways such as helps in mechanical removal of mucus, infective pathogens, and inflammatory mediators, promotes ciliary beat frequency and strengthens the antimicrobial and antiviral barrier function. There are very limited evidence on role of Jala neti in upper respiratory tract infection. So, there is need of research to study the effect of Jala neti against COVID-19 infection in humans.

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