



## *Jal Neti* Sample for COVID Detection: A Novel Hypothesis

Anish Gupta<sup>1</sup> · Bhavna Gupta<sup>2</sup>

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**Abstract** The current standard method of diagnosing COVID status has low sensitivity which led the authors to ponder on alternative ways of taking the sample. Various studies have explored the role of nasal wash, a sample taken by injecting and aspirating saline with the help of a syringe but to the best of our knowledge, the use of *Jal Neti* kriya sample to detect coronavirus has not been reported in the literature so far. *Jal Neti kriya* is an integral part of shatkarmas-six actions of purification of the human body, written in the Yogic system of healthcare. It involves pouring water in one nostril and flushing out through the other nostril with the help of special equipment called “Neti pot”, to keep the nasal passage clean. The authors find it worthwhile to share their hypothesis, which can pave a way to future research in COVID-19 detection.

**Keywords** COVID-19 testing · Nasopharyngeal wash · Jal neti

### Introduction

*Neti kriya* is an ancient Indian airway cleansing technique which helps clean the nasopharyngeal passages and prevents and treats upper respiratory tract diseases, including viral infections. It is of two types—*Jal Neti* and *Sutra Neti* [1, 2]. *Jal Neti* is done with the help of a “*Neti pot*” filled

with lukewarm saline water although some people have also used milk and honey (Fig. 1). *Neti kriya* effectively removes foreign bodies such as dust, allergens and enhances the drainage of sinuses by preventing mucus stasis [1]. There is a lot of published literature which demonstrates the utility of *Neti kriya* in reducing inflammatory mediators in nasal secretions and proves its efficacy in chronic cases of rhinitis and sinusitis [1, 3]. Many recent review articles have also appreciated its role in preventing and managing COVID cases. The current standard method of diagnosing COVID status has low sensitivity which led the authors to ponder on alternative ways of taking the sample. Various studies have explored the role of nasal wash, a sample taken by injecting and aspirating saline with the help of a syringe but to the best of our knowledge, the use of *Jal Neti* kriya sample to detect coronavirus has not been reported in the literature so far. The authors find it worthwhile to share their hypothesis, which can pave a way to future research in COVID-19 detection.

### Samples for Coronavirus Testing

1. The nasopharyngeal swab technique is the current gold standard method of taking a sample from the upper respiratory tract to detect coronavirus infection. In this, a health care worker has to insert a swab parallel to the floor of nasal passage up to the nasopharynx. Centre for disease control (CDC) guidelines recommend that the swab must reach a depth equal to the distance from the nostrils to the outer opening of the ear. The swab should be in place for several seconds to absorb secretions and then it should be removed slowly, in a rotating fashion [4]. The procedure is painful in maximum subsets, and

✉ Bhavna Gupta  
bhavna.kakkar@gmail.com

<sup>1</sup> Department of Cardiothoracic Vascular Surgery, All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India

<sup>2</sup> Department of Anaesthesiology, All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India

sensitivity is only 60–80% in various studies even after performing correctly.

2. The oropharyngeal swab is collected as an alternative or in addition to the above nasopharyngeal swab. In this, the swab is touched with tonsillar pillars and posterior oropharynx while avoiding contact with tongue, teeth and gums.
3. A nasal mid-turbinate swab (2 cm depth), also called deep nasal swab, can be collected either by the healthcare worker or by the patient himself under supervision.
4. A nasal anterior nares swab (1 cm depth) can be collected either by the healthcare provider or by the patient himself after on-site supervision or at home.
5. There is another technique called nasal wash/aspirate in which 1–2 ml of non-bacteriostatic saline (pH 7.0) is instilled into one of the nostrils, while keeping the other nostril closed, with the help of a 5 ml syringe having an attached tubing and the fluid is aspirated back from the same nostril. It is done very gently while withdrawing and rotating tube and suction can also be applied while taking out the sample.
6. Lower respiratory tract samples like bronchoalveolar lavage (BAL), tracheal aspirate and pleural fluid are useful in severe cases.
7. Many studies have been done to find the utility of sputum and saliva, but they are not satisfactory samples.

### What is *Jal Neti Kriya*?

*Jal Neti kriya* is an integral part of shatkarmas-six actions of purification of the human body, written in the Yogic system of healthcare [1, 3]. It involves pouring water in one nostril and flushing out through the other nostril with the help of special equipment called “Neti pot” (Fig. 1), to keep the nasal passage clean. It is also highly beneficial in



**Fig. 1** Traditional Neti pot but disposable ones are available

other problems like bronchitis, migraine headaches, stress, recurrent middle ear infections, etc. [1, 3].

### Safety of *Jal Neti Kriya*

Yoga practitioners have been practising *Jal Neti kriya* for over thousands of years, and modern research has also proven its benefits. A small amount of water entering the throat or mouth, by mistake, does not produce any harm.

### What is *Jal Neti Sample*?

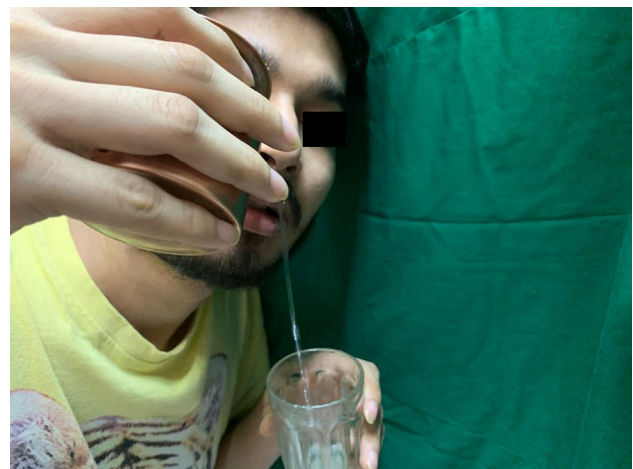
It is equivalent to a nasopharyngeal wash but the sample covers the whole path from one nostril to nasopharynx to the other nostril (Fig. 2). Theoretically, it sounds better than a usual nasal wash, but we have to investigate its efficacy in comparison to a nasal swab.

#### How to Take *Jal Neti sample*?

To take a sample by *Jal neti*, we need the following equipment-

1. Neti pot
2. Sterile plastic container
3. A pair of gloves
4. Sterile water/Non bacteriostatic saline.

The patient sits in kagasana with a 1-foot distance between legs, by leaning forward from the lower back. The patient tilts his head to the opposite side and inserts the nozzle of the pot into the nostril. The patient will keep his mouth open throughout the neti process and will breathe through the same. Let the water flow through one nostril and come out through the other nostril and patient can collect it in the sampling chamber (sterile plastic container) (Fig. 2).



**Fig. 2** Path covered by *Jal neti sample*, Hypothetical method of collecting sample not a real procedure

### Advantages of a *Jal Neti* Method of Sampling

1. The health care worker will not come in contact with the COVID patient during sampling.
2. The probability of extracting the virus will be higher theoretically because of the larger surface area of contact of the fluid with the affected mucosa. The patient can keep the used pot for home therapy.
3. The patient can do this Neti at home regularly every morning, after learning the procedure which will help him to cleanse his upper airway because it will help in decreasing the chances of lower respiratory tract infection with coronavirus by breaking the chain of infection.

### Problems and Solutions

This technique is not possible in intubated or unstable patients, and it is difficult to teach small children because it needs a little training, but it can be very useful in adult patients and they are the most affected group with this disease. There is also a small possibility of transmission of COVID-19 through the interchange of the neti pot, but disposable neti pots are available in the market at a very affordable cost so that every patient uses his separate pot without sharing amongst each other. We also propose to stream short videos explaining the art in the local language on TV screens hung in the testing area for easy comprehension.

### Discussion

In a study on different types of clinical specimen for coronavirus detection, Wang et al. found bronchoalveolar lavage (BAL) was positive in 93% of patients, sputum in 72%, nasal swabs in 63%, brush biopsy 46%, pharyngeal swab (32% and urine (0%) [5]. A false sense of security comes after a false negative report of COVID in an infected patient, which increases the risk of spreading infection to others. Liu et al. found that the reproductive number (R0) of coronavirus is 3, which means that an infected COVID

patient infects three new cases [6]. There is also a risk of infection to health care workers taking the sample, even after wearing personal protective equipment (PPE). Previous studies have found that the differences among nasopharyngeal swab, nasal wash, and oropharyngeal swab were not statistically significant for detection of coronavirus, influenza virus, ebola virus, respiratory syncytial virus etc. [7]. It is suggested from the previous studies that viral RNA levels are higher and more frequently detected in nasal specimens as compared to oral samples. Therefore we recommend that nasopharyngeal wash specimen taken by Jal neti kriya can increase the sensitivity of detection and needs to be compared with nasopharyngeal swab technique in clinical trials.

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