COVID – 19: A pandemic disease and its relation to *Pranavahasrotas* (Respiratory system) - A review

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**Abstract**

COVID-19 is an infectious pandemic disease caused by the virus called as SARS-CoV-2. It is the pathogens that primarily target the respiratory system of human beings. The most common symptoms at the beginning of COVID-19 illness are, cough, fever, muscle pain, diarrhoea, headache, and Acute Respiratory Distress Syndrome occurs in severe cases. The idea of Srotas, in all different appropriate meaning, is still related in the current situation and might give different visions if revisited. *Hridaya* (Heart) and *Mahasrotas* (Gastro-intestinal tract) and are the origins of *Pranavahasrotas* (respiratory system). In the view of the current review, the introductory classical text of Ayurveda like *Charak Samhita* and compilation textbooks, research publication and internet sources are also reviewed to explore the relation of *Pranavahasrotas* and COVID-19 disease. In the diseases of *Pranavaha srotas*, similar symptoms are found as it is in connection with an organ like heart, lungs, brain and Gastro-intestinal tract. The treatment protocols for diseases of *Pranavaha srotas* includes general *Snehan Karma* (Oleation) and *Swedan Karma* (Sudation) therapies, *Vamana* (emesis), *Dhunapana* (medicated smoking) therapy, *Rasayan* therapy (Rejuvenation Therapy), treatment of *Jwar* (fever) and classical formulations like *Kantakari ghrita*, *Shrungyadi Churna*, *Talisadi churna*, *Vasa Avaleha*, *Kanakasava*, *Shwasakuthar Rasa*, *Mahalaxmivilas rasa* etc. recommended. So current review will be useful for research on treatment protocol mentioned for the management of diseases of *Pranavaha srotas* given COVID-19 and also as a reference for additional safety and efficacy studies; pharmaceutical manufacturing as well as standardization of classical formulations stated for the treating diseases of *Pranavaha srotas*.

**INTRODUCTION**

The coronavirus disease (COVID-19) pandemic, which originated in the city of Wuhan, China, has quickly spread to different countries, with many cases having been reported worldwide. It is the biggest challenge that the world has faced after the Second World War, which caused a global health disaster. It is caused by a novel coronavirus called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). In the word COVID-19": the “CO” means corona-virus, “VI” is virus and “D” means dis-
The virus has reached to every continent except Antarctica, and emergence in Asia in late last year. Till 11 May 2020, over 4.1 million individuals worldwide confirmed positive for COVID-19 with, and more than 283,000 deaths have been reported (David, 2020; Parwe et al., 2020).

Lockdown restrictions were put in place in many countries to slow- down the spread of the virus and prevent community transmission (Nisargandha and DadaraoParwe, 2020). It includes stopping large gatherings such as sporting events, concerts, restrictive travel, quarantining citizens, and schools and contact tracing, testing of suspected cases. The contagion is moving like upsurge, one that may yet smash on those least able to cope. But COVID-19 is much more than a health crisis. By stressing every one of the countries it touches, it will leave a profound scar that has the potential to create an overwhelming economic, social, and political emergency (Khanna et al., 2020).

Pandemic is described as disease occurrence in multiple countries around the world at the same time. Coronavirus emerges as a new kind of virus that not only able to infect people easily but can spread from person-to-person constantly and efficiently. This virus spread is vital, and currently, there is no vaccine available and also no treatments able to prevent it yet. COVID-19 has common symptoms like are cough, fever, muscle pain, shortness of breath. Sore throat, runny nose, body ache nasal congestion, diarrhoea can occur in some patients. These symptoms begin gradually and are usually mild. Some people feel well and become infected without any symptoms. Without needing special treatment, most people (about 80%) recover from the disease. Difficulty in breathing also develops in the patient who becomes seriously ill by this disease. Serious illness develops in older people and to those with underlying medical problems like hypertension, heart diseases or diabetes (Huang et al., 2020).

Many scholars considered the Science of life Ayurveda to be the oldest healing science. It encourages the maintenance of health through right thinking, proper diet, lifestyle and the use of herbs close, and also it places great importance on disease prevention. In the view of COVID-19 pandemic, Ayurveda interventions become even more significant by the fact that there is a detailed description of causation and management of epidemic (Janapadodhwamsa) (Jyotirmoy and Rekha, 2016). In Ayurveda, there is a term called “Srotas,” i.e. Channel of circulation or path which carry vital nutrients to different organs of the body. The Srotas acts as one of the essential factors in the pathogenesis of diseases, as it is said that diseases are caused because of the obstacle in the Srotas.

The Srotas which related to the transfusion and transportation of Prana Vayu (Life Sustaining air) in the human body is called as Pranavaha Srotas (respiratory system). There are 13 significant srotas mentioned in Ayurveda out of which Pranavaha Srotas is important & main Srotas of the body. It is in connection Heart, brain, gastro-intestinal tract and various essential arteries of the body. It consists of the organ from nose to alveoli via external nares, nasal chambers, pharynx, trachea, bronchus & bronchiolus, which carry oxygen or carbon dioxide to lungs and from lungs, these gases are transported to heart by pulmonary veins (Patil and Bhujade, 2017).

In the current review, an attempt has been made to correlate the Covid-19 disease and Pranavaha Srotas (respiratory system), which will help to investigate Ayurveda treatment protocols in the management of COVID-19.

MATERIALS AND METHODS

In the view of the current review, the introductory classical text of Ayurveda like Charak Samhita and compilation textbooks have been studied for the concept of pranvahasrotas, diseases caused by its vitiation, and their treatment protocol along with various formulations indicated for it. Some research publication and internet sources are also reviewed to explore the relation of Pranavaha srotas and COVID-19 disease.

RESULTS

Coronaviruses cause diseases of the respiratory and central nervous system in lots of species of animals, including humans (Weiss and Navas-Martin, 2005). In diseases, Pranavaha srotas of the primary respiratory system is affected. Pranavaha srotas get vitiated because of various reasons like Raja (dust particles which are visible or may not be visible, containing viruses), Dhuma (smoke containing air pollutants) shitasthana (cold environment). This Raja when enters through mouth and nose develops disease like Shwas (Breathing problems like cough or throat irritation), Kasa (cough), Hikka (hiccup), Pratishaya (Running or stuffy nose) which are similar to coronavirus. Pranavata, situated in the head, also functions in the chest and throat. It controls or maintains Buddhi(intellect), Hrudaya (heart), Indriya (sensory organs) and Chitta (mind). It regulates actions like Nishthiva (spitting), Ksavathu(sneezing), Udgaru (belching), Nihsvasa (inspiration) and Annapravesa (swallowing). Signs
and symptoms of vitiation of Pranavaha Srotas and its relation are Atisrishtam (Respiratory act is too long) Atibaddham (Restricted respiration), Kapitam (Agitated) Alpalpam (Shallow or short breaths), Abhikshnam (Frequent, or repeated, increased) Sashadham (Stertorous) Sashoola (Painful) (Tripathi, 2016).

The line of treatment for diseases of Pranavaha-hasrotas includes systemic Sanshadhana (Body purification) treatment and specific San- shamana (Counteract) treatment which includes Snehan Karma (Oleation), Swadan Karma (Sudation) therapies, Vamana (emesis), Dhunapana (medicated smoking) therapy, Rasayan Therapy (Rejuvenation Therapy), Jwar chikitsa (treatment fever) and various formulations. To avoid recurrence of the disease, and to impart strength to Pranvahasrotas, proper rejuvenate treatment is mentioned. One of its examples is special therapy called ‘Vardhaman Pippali Rasayan Prayog’ in which Long pepper is used.

Similarly, Black Pepper can also be used in the ‘Vardhaman karma rasayan’ method. There are many formulations with different dosage form indicated in the treatment of diseases of Pranvahasrotas like Medicated Ghritas (Butter) preparations - Kantakari ghrita, Pippalyadi ghrita and Trusnadi ghrita, Mahashiladi Ghrita; Powder formulations-Shrungyadi Churna, Somachurna, Talisadi churna, Yashtinmadhu churna; Medicated Jam - Vasa Avaleha, Vyaghri Haritaki Avaleha, Chitraka Haritaki Avaleha; Fermented preparations- Shrungyadi Churna, Somochurna, Talisadi churna, Yashtimadhu churna; Medicated smoking therapy, Rasayan Therapy (Rejuvenation Therapy), Jwar chikitsa (treatment fever) and various formulations. To avoid recurrence of the disease, and to impart strength to Pranvahasrotas, proper rejuvenate treatment is mentioned. One of its examples is special therapy called ‘Vardhaman Pippali Rasayan Prayog’ in which Long pepper is used.

In the classics of Ayurveda, it is mentioned that the line of treatment for diseases of Pranvahasrotas should be done like Shwas Vyadhi treatment. The Shwas vyadhi significant symptoms can be correlated with Asthma and Dyspnoea as the causes and symptoms of Pranvahasrotas vyadhish can be correlated with the COVID-19. Then the line of treatment which used treat diseases of Pranvahasrotas in Ayurveda can also be to apply to the patient of COVID-19 disease. Ayurveda views diseases like COVID-19 as an assault on the immune system (ojas) and the respiratory system Pranavaha srotas). Therefore the line of treatment mentioned for treating diseases of Pranavaha srotas focuses on boosting immunity by Rasayan therapy and also the other systemic treatment of body purification, specific treatment process mentioned may enhance the capacity of the respiratory system.

DISCUSSION

Ayurveda can be stated as a complementary system of healing and encompasses various techniques for assessing health. It not only focuses on illness but also maintains all life cycle which supported by the energy instability (Verhoef et al., 2005). The channel of circulation in the body describes in Ayurveda in terms of Srotas. They are the structure or channel through which the process like moving, flowing, oozing, and penetration of various nutrients and components of the body takes place. Pranavaha srotas is the transport system of Prana which has been stated as vital energy of the body responsible for each activity of living being and also as vital air inhaled in the body. By the process of diffusion, the exchange of respiratory gases between lungs and blood Takes place across the alveolar and capillary wall, and this process can be correlated with one of the physiological function of Pranavaha srotas.

The symptoms of diseases of the respiratory system can also be correlated with most of the symptoms explained in the vitiated Pranavaha srotas. Hence, the concept of Pranavaha srotas can also be implicit in the light of these facts. Hridaya (Heart) and Mahasrotas (Gastro-intestinal tract) are Moolsthan of Pranavaha srotas. Moolasthan (Origin) is the place from where it is being distributed and regulated. The novel Coronavirus is the pathogens that primarily target the respiratory system of human beings. The symptoms at the onset of COVID-19 disease are fever, cough, muscle pain. At the same time, in severe cases diarrhoea, haemoptysis sputum production, headache, dyspnoea, lymphopenia, and moderate to severe pneumonia, Respiratory Distress Syndrome are found (Cascella et al., 2020). In the diseases of Pranavaha srotas, similar symptoms are found as it is in connection with an organ like heart, lungs, brain and Gastro-intestinal tract. COVID-19 positive patients showed abnormal respiratory findings, increased levels of plasma pro-inflammatory cytokines and higher leukocyte numbers (Rothan and Byrareddy, 2020).

The formulation mentioned for treating diseases of Pranavaha srotas is used because it is basic texts of Ayurveda science which is known for Chikitsa(treatment) and also some compilation textbooks also referred for the review. The classical formulation mentioned should be used with proper classical dose and Anupan (adjuvant) for its efficacy. Currently, there is no

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vaccine and precise antiviral treatment available for COVID-19. So this review will be useful for research and pharmaceutical manufacturing as well as standardization of classical formulations mentioned for the treating diseases of Pranavah srotas.

CONCLUSION

Pandemic disease COVID-19 emerge as a global threat to human beings. At present, there is no definite antiviral treatment, and a vaccine is available for COVID-19. In Ayurveda, there is a detailed description of causation and management of epidemic diseases mentioned in terms of janapadodhwamsa. Hence, this life science becomes a ray of hope to battle diseases like COVID-19. The COVID-19 shows most common symptoms like dry cough fever and shortness of breath. In the current review, an attempt has been made to correlate COVID-19 with Pranvahasrotas mentioned in Ayurveda as there is a similarity between causes and symptoms of diseases of Pranavah srotas and the COVID-19. Thus the line of treatment which used treat diseases of Pranvahasrotas can also be to apply in the cases of COVID-19 disease. The treatment protocols for diseases of Pranvahasrotas includes general Snehan Karma (Oleation), Swedan Karma (Sudation) therapies, Vamana (emesis), Dhunapana (medicated smoking) therapy, Rasayan therapy (Rejuvenation Therapy), treatment of Jwar (fever) and classical formulations like Kantakari ghrita, Shrungyadi Churna, Talisadi churna, Vasa Avaleha, Kanakasava, Shwasakuthar Rasa, Mahalaxmivilas rasa etc. are recommended. So the current review will be useful for researches on treatment protocol mentioned for the management of diseases of Pranavaha srotas given COVID 19 and also as a reference for additional safety and efficacy studies; pharmaceutical manufacturing as well as standardization of classical formulations stated for the treating diseases of Pranavaha srotas.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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