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AN AYURVEDIC APPROACH TO POST-COVID DYSPNOEA

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ABSTRACT

Coronavirus disease (COVID-19), a pandemic emerged in the year 2019 is a contagious infection caused by SARS-CoV-2 virus which belongs to a group of RNA viruses. It mainly affects the respiratory system and clinical presentations ranges from mild to moderate symptoms and even asymptomatic. After initial recovery, about 10-15% population experience post covid complications which may persist for weeks or months. The most common symptoms are acute cough and fever/chills, associated with shortness of breath, fatigue, chest pain, cognitive impairments, insomnia, myalgia, joint pain, etc. From the Ayurvedic perspective, COVID-19 can be understood as an *Aupasargika Roga* considering its widespread transmission. *Jwara* is one of the common *Aupasargika Roga*. Based on the *Dosha* predominance, it can be correlated to *Kapha Vata Pradhana Sannipataja Jwara* and post-covid dyspnoea can be understood as its *Upadrava* with pathogenesis pertaining in *Rasadi Dhatus*. The pathogenesis includes *Kapha Pradhana Tridoshadushti*, *Vatamarga Avarodha*, *Pitta Prakopa*, and *Dhatu Kshaya* leading to the persistence of *Swasa*. This suggests pathogenic phases in post-COVID. The features of post-covid dyspnoea resemble that of *KaphaVata Dushti Lakshana* and also *Pranavahasroto Dushti Lakshana*. *Agnideepana*, *Dosha Shamana*, *Tarpana* and restoration of *Vyadhikshamatva* through *Rasayana Chikitsa* considering *Bala* of the patient can be done which are beneficial for immune-modulation, immune protection, maintain *Dhatu Samya* and improving the pulmonary functions.

KEYWORDS: Post-COVID Dyspnoea, *KaphaVata Pradahana SannipatajaJwara, Rasayana Chikitsa.*

INTRODUCTION

Post-covid dyspnoea is one of the common complications among respiratory sequelae of Coronavirus disease (COVID-19), declared a pandemic in the year 2019. It is a highly contagious infection by SARS CoV2 virus mainly affecting the respiratory system. During the infective period, individuals experience acute respiratory distress syndrome and after initial recovery within a few weeks, 10-20% population may be subjected to its long-term effects or post-covid syndrome, commonly called as long Covid such as post covid dyspnoea, cough, fatigue, chest pain, cognitive impairment.[1] Persistence of shortness of breath within 3 months or 12 weeks from the onset of COVID-19 and lasting for 3-4 months is indicative of post-covid dyspnoea.[2]

The individual experiences exertion, dry cough, chest pain, and pulmonary functions become limited which can impose substantial challenges to patient wellness and quality of life and may relapse over time. Among COVID survivors, older adults (>60 yrs.), and those with underlying comorbidities, smokers, and pre-existing respiratory illness (Asthma, COPD, etc) are at higher risk for developing persistent dyspnoea.[8] The illness may persist on defective immune mechanisms which can become fatal and increase mortality.

The post-covid pulmonary abnormalities usually encountered are diffuse lung disease (either inflammatory or fibrotic), pulmonary embolism, and pulmonary infections.[4]

History of SARS-CoV-2 infection and findings on physical examination provide a diagnostic clue for post-COVID dyspnoea.[7] 80% of hospitalized patients with Covid-19 continue to experience breathlessness after 3 months of discharge.[5] Screening the patients to assess symptoms, functional limitations, and find risk groups, suggest effective management and its improvement can be done using diagnostic tools such as CT chest, PFT, modified Medical Research Council (mMRC scale) for the assessment of dyspnoea during daily activity and assessment of exercise capacity to evaluate functional ability. Modern management includes anti-inflammatory, anti-fibrotic medications, domiciliary oxygen therapy, pulmonary rehabilitation, and breathing exercises to optimize pulmonary function and quality of life.

PATHOPHYSIOLOGY

The exact reason for the persistence of long covid syndrome is unclear, it may be due to ongoing viral activity, damage to cytokine storm, underlying comorbidities, autoimmunity, consequence of therapy used, or a combination of all.[3] In response to a COVID-19 infection, there is an exaggerated immune response and a heightened pro-inflammatory state which can affect homeostasis. To maintain immunological homeostasis, a counter-balanced anti-inflammatory response ensues, leading to immune suppression. This prolonged immunosuppression may contribute to the development of post-COVID syndrome.[6]

Post-covid dyspnoea follows inflammatory and fibrotic(deteriorating) phases. In type 2 alveolar cells, a large number of viral particles are produced and released, followed by an immune response (cytokine storm) that mediates the destruction of infected cells or endothelial injury, resulting in tissue release i.e., loss of alveolar cells and activation of clotting factors leading to diffuse intravascular coagulation with microthrombi. The basement membrane becomes covered with debris, consisting of fibrin and dead cells, which can occlude the lung capillaries and may further lead to pulmonary artery thrombosis and embolism. This can further result in lung tissue damage and features of dyspnoea. Diffusion limitation occurs during physical activities due to arterial hypoxemia. As the disease progresses, the more consolidated air spaces do not inflate, leading to volume loss. This loss of volume reduces total lung compliance, and the work of breathing may also be increased due to a reduction in surfactant activity.

AYURVEDIC PERSPECTIVES ON POST COVID DYSPNOEA

In Ayurveda, communicable diseases can be grouped under *Aupasargika Roga.* COVID-19 is a type of *Aupasargika* Roga[9] due to its nature of spread from person to person through *Niswasat* (respiratory droplets). As the condition is acquired from an *Aganthuja Nidana* i.e., a *Bhuta* (microbe/coronavirus) with features of acute febrile illness associated with other morbidities can be understood as an *Aganthuja Jwara*, particularly *Bhutabhishanga.* This type of *Jwara* is associated with *Tridosha Dushti* and further exhibits the features of *Nija Jwara.*[10] Based on the *Dosha* predominance, the condition can be correlated to *Kapha Vata Pradhana Sannipataja Jwara* and post-covid dyspnoea can be understood as its *Upadrava* as *Swasa* is one among *Jwara Updrava* with pathogenesis pertaining in *Rasa Dhatu and Rakta Dhatu.* The pathogenesis includes *Kapha Dushti, Vatamarga Avarodha*, and *Dhatu Kshaya* with features of *Swasa*. This suggests a progressive pathogenic phase in post-covid.

Symptoms of post-covid dyspnoea resemble *KaphaVata Dushti Lakshana* and also *Pranavahasroto Dushti Lakshana*. *Agnideepana, Dosha Shamana* and restoration of *Vyadhikshamatva* (immunological homeostasis) through *Rasayana Prayoga* considering *Bala* of the patient can be done.

In the pathogenesis, inoculation of coronavirus in *Pranavaha Srotas* further affects *Sharirika Doshas* which not only produces pathologic changes in the respiratory system but also in whole body ie., *Sarva Daihika Lakshana* i.e., affecting multiple organs due to similarity in features like *Tapa Hani, Aruchi, Jaadya, Swasa,* and *Kasa*. *Aganthuja Roga* due to *Bhutabhishanga* may be contagious. In the post-recovery phase, as a complication of COVID-19, pneumonia also shows lung fibrosis which can alter lung functions, cause dyspnoea, reduced lung capacity and physical activities.

CoV2 infection is capable of immunological dysregulation. Cytokine storm thus can be understood as vitiated *Doshas* predominantly *Pitta Vridhi*, deranged *Agni* along with *Ama* circulating throughout the body, obstructing *Pranavaha Srotas* and *Mahasrotas.* Thus, the patient exhibits respective *Dushti Lakshana* like *Kupita Swasa, Alpam Alpa Swasam, Sashabda Lakshana,* and *Avipaka, Annadwesha,* and *Chardi* respectively. *Bala* is necessary during any infection but depends on inherent factors and *Ojas* is responsible for *Bala*. *Ojo Kshaya* indicates defective immunity and thus requires nutritional support for proper pulmonary function.

Relapse or continuation or secondary manifestation indicates the presence of *Leena Dosha*. Long-term *Dhatu-leenatatvam* of *Saama Kapha* and *Vata dosha* compromises the optimum functional status of *Rasa* and *Rakta Dhatus* thus *Pranavaha Sotas* are affected thus, the patients have *Ksheena Dhatu* and subjected to altered immune responses. There will be a deficiency of *Dhatu Saarata*. In *Kapha Vata Pradhana Sannipataja Jwara, Sama Dosha* which can be a viral pathogen gets transiently embedded in the lung tissues. Post-covid syndrome have a relapsing nature thus when supported by external factors like *Oja Kshaya, Ksheena Dhatu*, and other comorbidities bring *Sama Dosha* to *Koshta* and increases severity

The management can be focused on removing *Dhatu Leenatvam* initially. The periodicity of illness depends on obstruction in *Rasavaha* and *Raktavaha Srotas* supplying respective *Dhatu*. This results in manifestation of *Karshyam, Jaadyam,* and *Dhatu Kshobhanam* and shows clinical features of *Rasa Dushti Laksha* like *Asraddha, Tandra, Saada, Krushangata*

and features of *Swasa* seen. Complications include pneumonia in both lungs, organ failure, and death and Pneumonia is the most frequent serious manifestation of infection, characterized by dyspnoea.

The condition may reoccur when other systems of the body get involved or when symptoms persist for a long time. An effective immune restoration process may be beneficially combating insufficient immune function and overlay expressed immune function. In post-covid dyspnoea, there is a deadly uncontrolled systemic inflammatory response. So, we should use immunomodulatory drugs rather than immunostimulant drugs. In the later stages, cytokine storming and hypersensitivity can be controlled. The role of immunomodulatory drugs is to keep balanced immunity by regulating immunity.

In Ayurveda, *Rasayana Chikitsa* plays a major role in combating these situations by effective *Vyadhikshamatva* and modulating immunity as a restorative approach. In the post-recovery phase, the individual will have *Ksheena Dhatus* and declined *Vyadhikshamatva*. As the condition mainly affects the *Kapha Sthana*, maintaining *Agni* and *Mrudu shodhana* is important before *Rasayana Prayoga*. Many types of Rasayana preparations are mentioned in the classics. Certain preparations like *Chyavanaprasa*, *Agasthyarasayana* and *Kushmanda Rasayana*, are mentioned for the restoration. These *Rasayana* formulations generally have *Kapha Vata Hara, Kasaghna, Balya* actions are beneficial for restoring immunity, protecting *Pranavaha Srotas* and improving the pulmonary functions. *Chyavanaprasha* mentioned by *Brihatrayee* is a potent *Rasayani*, having *Deepana, Pachana, Tridosha Hara* especially *Vata Hara, Vatanulomana* may be able to clear the *Pranavahasrotodushti*, corrects the *Jataragni* thus clearing the circulation. This could improve the oxygen uptake in pulmonary arteries and improve pulmonary function. *Agasthya rasayana* has indications in the *Kaphanubandha* and *Vathanubandha* conditions, also having *Swasahara,agni deepana* helps in curing the *Leena Avastha* as in chronic respiratory illness. *Kushmanda Rasayanam* has actions in *Karshyata, Urakshata, Swasahara*, and *Kasahara* which could help restore the strength and immunity of individuals.

CONCLUSION

Post-COVID-19 conditions can limit the pulmonary functions of the individual and affect the ability to perform daily activities. At present, there is no specific treatment modality for post-covid conditions. However, symptomatic management, pulmonary rehabilitation, and breathing exercises are supportive. *Rasayana Chikitsa* in Ayurveda as a restoring and

promoting aspects help in improving quality of life of the individual. *Rasayana Chikitsa* is *Apunarbhavatwa*, thus reducing *Shwasa Vega* and its chronicity too.

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