



Review Article

UNDERSTANDING POST COVID CONDITIONS IN THE BACKGROUND OF *PUNARAVARTAKA JWARA*- A REVIEW

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ABSTRACT

COVID-19, is a disease caused by the novel corona virus SARS-CoV-2 that shows symptoms like flu or may even remain asymptomatic. Most people who develop Covid 19 recover, but current evidences suggest that, approximately 10% to 20% people experience a lot of effects after they recover from this illness. The common symptoms include headache, sleep problems, depression or anxiety, fatigue, post-exertional malaise, difficulty breathing, rashes and sometimes recurrence of fever itself. These mid and long term effects are collectively called as post Covid 19 conditions. The patients visiting the post Covid clinics are increasing day by day. The researchers are working with patients who develop post Covid 19 condition to better understand about its causes, symptoms and effects. In this current situation, it is very important to analyse this in an Ayurvedic perspective. Ayurveda has mentioned a condition called *Punaravartaka jwara*, in the context of *Jwara chikitsa* in *Caraka Samhita* that describes that, if a person, who has become free from *Jwara*, resorts to prohibited factors before gaining strength, then the *Jwara* may reappear. Sometimes, the *Dosas* causing *Jwara* undergo *Paripaka* in the *Dhatus* and the *Jwara* may subside but manifest later as harmful symptoms like, *Dinata*, *Svayathu*, *Glani*, *Panduta*, loss of appetite, itching, urticaria, pimples and suppression of the power of digestion. So, the manifestation of *Punaravartaka Jwara* has similarity with the post Covid 19 conditions. So, the present article aims to review the analogy of the contributing factors and clinical presentation of *Punaravartaka jwara* and post Covid condition and to plan a treatment protocol.

INTRODUCTION

Corona virus disease 2019 (COVID-19), the viral illness caused by the novel corona virus SARS-CoV-2 has resulted in significant morbidity and mortality across the world since the first cases that was identified in Wuhan China, in December 2019. Although the majority of the patients who had COVID-19 are asymptomatic or have mild to moderate disease, approximately 5% to 8% of infected patients develop hypoxia, bilateral lung infiltrates, decreased

lung compliance requiring non-invasive ventilation (NIV) or mechanical ventilator support.^[1] The incubation period of the disease is found to be between 3 and 14 days. It is observed that elderly patients and those with co-morbidities like diabetes, cardiovascular conditions, respiratory illness, malignancies, and chronic kidney diseases, and immune compromised patients, patients undergoing chemotherapy or radiotherapy are more prone to fatality. The symptom of the disease is more flu like or the infected patients can even remain asymptomatic.^[2] "Post-COVID conditions" is an umbrella term for the wide range of physical and mental health consequences experienced by some patients that are usually noticed four or more weeks after a SARSCoV-2 infection. Different studies show that about 10 to 80% of the people who recovered from Covid 19 show mild or moderate post Covid conditions. *Punaravartaka jwara* (relapsing fever) is a condition mentioned by *Caraka* in the

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context of *Jwara Chikitsa* which states that, if a person, who has become free from *Jwara*, resorts to prohibited factors before gaining strength, then the *Jwara* reappears. The present article aims to review the analogy of the different contributing factors and clinical presentation of *Punaravartaka jwara* and post Covid condition and to assess the treatment approach.

Post Covid Condition

Post COVID-19 condition is defined as the illness that occurs in people having a history of probable or confirmed SARS-CoV-2 infection mostly, within three months from the onset of COVID-19. The symptoms and effects can last for at least two months. Post COVID-19 condition, also known as “long COVID,” refers collectively to the constellation of long-term symptoms that some people experience after they have had COVID-19. People who experience post COVID-19 condition are sometimes referred as “long-haulers.”^[3]

- While most people who develop COVID-19 fully recover, some people develop a lot of mid-term and long-term effects like fatigue, breathlessness, and cognitive dysfunction like, confusion, forgetfulness, lack of mental focus and clarity. Some people also experience psychological effects as part of this.
- These symptoms might persist from their initial illness or develop after the recovery. They may come and go or sometimes relapse over time.^[3]

Based on the symptoms, Nalbandian *et al.* classified post-acute COVID-19 as follows-

- Subacute or persistent symptomatic COVID-19 in which the symptoms present up to 12 weeks from the initial acute episode.
- Chronic or post-Covid syndrome in which, symptoms present beyond 12 weeks.^[4]

The common post Covid conditions include

General Symptoms

- Tiredness or fatigue that usually interferes with daily life.
- Symptoms that gets worse after physical or mental effort (also known as “post-exertional malaise”).
- Fever

Respiratory and Heart Symptoms

- Difficulty breathing or shortness of breath
- Cough
- Chest pain
- Fast-beating or pounding heart

Neurological Symptoms

- Difficulty thinking or concentrating, sometimes referred to as “brain fog”
- Headache
- Sleep problems
- Dizziness when you stand up (light-headedness)

- Pins-and-needles feelings
- Change in smell or taste
- Depression or anxiety

Digestive Symptoms

- Diarrhoea
- Stomach pain

Other Symptoms

- Joint or muscle pain
- Rash
- Changes in menstrual cycles^[5]

Punaravartaka Jwara

There is lot of similarity in post COVID 19 conditions with *Punaravartaka jwara*.

If a person, who has become free from *Jwara*, resorts to prohibited factors before gaining strength, then the *Jwara* may reappear. If a person becomes free from *Jwara* when the *Doshas* have not completely been eliminated, then, even with mild irregularity in regimens (*Apachara*), it reappears. The patients have already suffered the fever for a long time and so there is weakness and loss of vitality in the tissues.

Sometimes, the *Doshas* may undergo *Paripaka* /metabolic transformation in the *Dhatu*s and gradually the fever subsides. But, their harmful effects continue as certain symptoms in patients like, *Dinata* (uneasiness), *Shvayathu* (edema), *Glani* (lassitude), *Panduta* (pallor or anemia), loss of appetite, itching, urticaria, pimples and suppression of the power of digestion.

Similarly, other diseases which are already cured reappear in these individual due to the non-elimination of the *Doshas* completely even by resorting to very little unwholesome regime after the cure of the disease.^[6]

Comparative Analysis of the Contributing Factors of Punaravartaka Jwara and Post Covid Condition

Punaravartaka means recurring. Recurrence means that which return after going away. Five conditions are mentioned under *Punaravartaka jwara* where the fever usually recurs.

Condition 1- Consumption of Restricted Foods and Activities before regaining strength. (*Asamjata bala*)

Even after the fever gets subsided, the person who had suffered from fever would not have regained his strength back. This means that, during remission period of fever, person will be having low strength and in such condition if the person consumes restricted foods and activities the fever which has subsided and almost gone away would reoccur.

Post Covid Condition

Covid 19 is primarily a respiratory disorder. Activities like, smoking can damage the lungs and impair the immune system's efficiency. In addition, the World Health Organisation (WHO) reports that smoking impairs the lung function, making it harder for the body to fight corona viruses and similar other respiratory diseases. Improper sleep pattern, excessive use of mobile phones before complete recovery from Covid 19 may develop fatigue, exertional dyspnea, mild to moderate grade of headache, disturbed sleep patterns etc.^[7] Excessive spicy and junk food intake before complete recovery may trigger the post covid conditions.

Condition 2- Incomplete elimination of the *Doshas* (*Durhrdeshu Cha Dosheshu*)

Doshas remaining in the body not being completely expelled, inspite of not causing relapse can damage tissues. These latent *Doshas*, on getting seated in deeper tissues will not produce fever, but these *Doshas* make sure that they trouble the body by producing symptoms like fatigue, weakness, indigestion, itching etc.^[8]

Post Covid Condition

The body responds to a viral infection immediately, with a non-specific innate response in which the macrophages, neutrophils, and dendritic cells slowdowns the progress of the virus and may even prevent it from causing symptoms. This non-specific response is followed by an adaptive response in which the body makes antibodies that specifically bind to the virus. These antibodies are proteins known as immunoglobulins. The body also makes T-cells that recognize and eliminate other cells infected with the virus which is called the cellular immunity. This combined adaptive response can clear the virus from the body, and if the response is strong enough, it prevents progression to severe illness or re-infection by the same virus. The effect of immunosuppressive therapy given for severe Covid 19 cases and corticosteroids given for quicker improvement and early fever recovery is thought to decrease this response leading to incomplete clearing of virus from the body. In a study conducted, 36.4% of the patients who received corticosteroids during Covid 19 had fever recurrence, which suggests a potential link with the relapse that requires further studies.^[9]

The corona virus may remain in people's brains after infection and trigger relapses in patients who thought they had recovered, according to a study published in the journal *Viruses*. In this study, mice that were infected with the virus through their nasal passages are said to developed severe illnesses due to brain infections, even after the virus left their lungs. In

humans, this can be used to explain why patients who appear to have recovered from COVID-19 sometimes relapse.^[10]

Condition 3- Presence of precipitating factors (*Swalpena apacharena*)

Doshas cause all diseases, fever also. As treatment principle, vitiated *Doshas* should be completely expelled from body by cleansing measures that include *Panchakarma* procedures to cure fever completely. But in the process of elimination of *Doshas* if *Doshas* are partially eliminated then fever may come down temporarily and give rise to a cured feeling. Here, the *Doshas* may undergo *Paripaka* in the *Dhatus* or may be considered as *Dhathuleenatwa* of *Doshas*. Later when person consumes even small quantity of unwholesome diet and activities, *Doshas* which were hidden latently in the body would gain strength, get vitiated again and cause fever to recur.

Post Covid Condition

If the virus is not completely eliminated from the body, even slight unwholesome food and activities like alcohol, smoking, irregular sleep pattern can cause fever to recur or can lead to other post Covid conditions.

Condition 4- Suffered from fever for a long time (*Chirakala pariklishtam*)

The patients who have already suffered from fever for a long time will have weakness and loss of vitality in the tissues. The fever can reappear in such people.

Post Covid Condition

Some people may be suffering from post-intensive care syndrome, a group of symptoms that sometimes occur in people who were patients in an intensive care unit and that includes muscle weakness, balancing problems, cognitive decline, and mental health disturbances observed after discharge from critical care that usually involved a prolonged period of mechanical ventilation^[11].

Post-Intensive Care Syndrome (PICS) may become the next public health crisis that may be faced when this acute form of COVID-19 crisis settles down a bit. The antibiotic intake during severe Covid 19 cases is also reported to cause digestive problems and disturb the intestinal flora. The cytokine storm due to severe Covid 19 is thought to cause cardiac illness later.

Condition 5- Affected with chronic diseases and weak mental status (*Durbalam deenachetasam*)

Those affected with chronic diseases and with weak mental status are more prone to recurrent fever.

Post Covid Condition

Adults over the age of 50, patients who have been critically ill, individuals having co-morbidities

particularly cardiopulmonary issues, hypertension, diabetes or obesity seems to be most at risk of developing post-Covid conditions. A wide Immunosuppressive factors such as drugs or pathological conditions could contribute to impair viral clearance and favour SARS-CoV-2 reactivation.^[12] A variety of severe psychiatric symptoms have been reported by acute Covid-19 patients, and these symptoms, despite decreasing in severity, persist in very early recovery patients. The changing trajectory observed with SARS suggests that psychiatric

symptoms of Covid-19 may persist for a long time after discharge.

Analogy in the Clinical Presentation

The presentation of *Punaravartaka jwara* also shows analogy with the post Covid condition. In a study conducted, post-viral fatigue was the most common symptom (23.5%), followed by arthralgia and myalgia 18.8% patients.^[13,14] Acharya Charaka also first mentions these two factors in *Punaravartaka jwara* like, *Dinata*, *Glani* and *Swayadhu*.

S.No	Clinical presentation of <i>Punaravartaka jwara</i>	Common Post Covid Condition
1	<i>Dinata, Glani</i>	<ul style="list-style-type: none"> • Difficulty thinking or concentrating (sometimes referred to as "brain fog") • Fatigue, sleeplessness (if it persists for more than 6 months and the symptoms increases, chronic fatigue syndrome is suspected)
2	<i>Swayadhu</i>	Bronchitis <ul style="list-style-type: none"> • Swelling of one leg, resulting from deep vein thrombosis • Swelling over foot due to pulmonary hypertension. • Multisystem inflammatory Syndrome in children (MISC) • Multisystem inflammatory Syndrome in adults (MISA)
3	<i>Na annakamata, Agnimandya</i>	<ul style="list-style-type: none"> • Digestive disturbances due to antibiotic intake, ACE 2 receptors etc

Treatment Approach

The treatment in Ayurveda may be broadly divided as- *Samana* and *Sodhana*. The pacifying treatments in Ayurveda known as the *Samana chikitsa* is not sufficient in Covid 19 cases. But, as an emergency and first line of treatment, *Samana* is always adopted, giving due consideration to the weak body condition of the patient. The *Samana* doesn't expel the *Doshas* completely out of the body giving way to reoccurrence which may be referred as post Covid conditions in the context of Covid 19. *Sodhana chikitsa* completely expels the *Doshas* from the body, giving no chances of recurrence.^[15] As mentioned in the context of *Punaravartaka jwara*, *Doshas* should be eliminated from the body either by elimination or alleviation therapies depending upon the stage and strength of the *Doshas*, even after the fever subsides in a patient of *Jwara*. For this purpose mild elimination therapies and *Yapana bastis* which are *Brhmana sodhanas* rather than *Langhana sodhanas*, should be administered. *Pathyahara* like, *Yusha* (vegetable soups) and *Mamsa rasa* (meat soups), which are light and proper *Dinacharya* may be followed.

CONCLUSION

The patients visiting the post Covid clinics are increasing day by day. In this current situation it is very important to analyse this in an Ayurvedic perspective. *Punaravartaka jwara* is analysed under five contributing factors, like, that caused due to, consumption of restricted foods and activities

(*Asamjata bala*), incomplete elimination of the *Doshas* (*Durhrdeshu cha dosheshu*), having presence of precipitating factors (*Swalpena apacharena*), in suffered from fever for a long time, (*Chirakala pariklishtam*) and in those affected with chronic diseases and weak mental status (*Durbalam deenachetasam*). There are a lot of similarities between *Punaravartaka jwara* mentioned in Caraka Samhita and post Covid conditions. So, this can be taken into due consideration while considering the management also.

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