

Management of post COVID arthralgia by *Amalaki Rasayana*: A case report

Research Article

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Abstract

Background: COVID-19 is an infectious disease caused by the newly discovered coronavirus. COVID-19 is caused by severe acute respiratory syndrome coronavirus 2 (SARS-COV2). Post-COVID syndrome for people who still have symptoms for more than 12 weeks after the start of acute symptoms. This may last up to one year. The most common symptoms reported are fatigue, anorexia, joint pain, dyspnoea, headache, anxiety, and critical manifestations like diabetes, hypertension, pulmonary fibrosis, renal failure, Rheumatoid Arthritis (RA), etc. *Agnimandya* (~diminution of *Agni*) is a residual symptom of COVID-19 which leads to *Dhatukshya* (~diminution of *Dhatu*). **Methods:** We describe a case of a 50-year-old male who developed arthralgia after the remission of acute COVID-19 infection and post-COVID symptoms. The patient was treated with *Haritakyadi yoga* for *koshtha shuddhi* followed by *Rasayana chikitsa* by *Amalaki Rasayana* for the next 30 days for post-COVID ailments. The prime aim of treatment was to recover the function of *Agni* and *koshtha shuddhi* by administering *Haritakyadi yoga* followed by rejuvenation treatment by *Amalaki Rasayana*. The patient was assessed using the WHO well-being index scale, signs and symptoms of post-COVID, six-minute walk test on the 0th, 15th, and 30th day follow-up. **Results:** *Haritakyadi yoga* followed by *Amalaki Rasayana* reduced symptoms of post-COVID arthralgia, improved energy levels of post-COVID symptoms, and enhanced WHO- well-being score. **Conclusions:** It is suggested by the mentioned case that *Amalaki Rasayana* may be used for managing post-COVID arthralgia and for improving general well-being in long COVID.

Keywords: *Amalaki, Arthralgia, Ayurveda, Post-COVID, COVID-19, Rasayana, Rheumatoid arthritis.*

Introduction

COVID-19 is an infectious disease caused by newly discovered coronavirus. COVID-19 is marked by severe acute respiratory syndrome coronavirus 2 (SARS-COV2). The three waves of COVID-19 have been a challenge for the medical fraternity and the common public both. We still have patients of long COVID-19, who experience certain physical and emotional discomfort after being cured of acute COVID-19 infection. In the guidelines by the National Institute of Health (NICE), two definitions of post-acute COVID are given: 1) ongoing symptomatic COVID-19 for people who still have symptoms between 4 to 12 weeks after the start of acute symptoms and 2) Post COVID syndrome for people who still have symptoms for more than 12 weeks after the start of acute symptoms (1). This may last up to one year (2). The most common symptom reported was fatigue, seen in almost 72.8 % followed by anxiety in 38%, joint pain in

31.4%, and continuous headache in 28.9% cases. Also, critical manifestations like diabetes mellitus, pulmonary fibrosis, stroke, renal failure, etc. were evident in the subjects (3).

Recently four case studies reported that arthritis and arthralgia developed after SARS-COV2 infection that were negative for Rheumatoid Arthritis and Anti-citrullinated protein/peptide antibodies (ACPA) before SARS-COV2 infection(4). In a recent study on post-COVID reported, out of 29 patients studied; 69% patients were found to have one of the following antibodies like ANA, antineutrophil cytoplasmic antibody (ANCA), anti-cardiolipin (aCL), anti-beta-2-glycoprotein-1, anti-cyclic citrullinated peptide(anti-CCP). The appearance of ACPA antibodies is an early hallmark of RA (5). Anti-citrullinated protein antibodies and flaring of RA after SARS-COV2 infection have also been described(6). Sara Ibrahim Taha et al. stated that the mechanism of post-COVID arthritis is due to hyper-inflammatory processes (ESR, CRP, IL6) associated with COVID-19 infection (7). However, it is unclear how often Arthritis or ACP antibodies can be generated after COVID-19.

In this correspondence, we describe a case who developed post-COVID arthralgia (pain and inflammation at the ankle joint especially increased in the morning) along with post-COVID symptoms like fatigue, dry cough, anorexia, dyspnoea, constipation,

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and recurrent burning sensation. The 5 grams of *Haritakyadi yoga* for 7 days was given before Rasayan therapy for mild laxative effect. Then the patient was treated with *Amalaki Rasayana (AR)* for 30 days for post-COVID ailments. *Amalaki Rasayana* is a formulation from *Charak Samhita Chikitsasthan prankamiya Rasayana adhyay*, which involves the use of *Amalaki (Phyllanthus emblica Linn.)*, *Madhu* (honey), *Ghritha* (cow ghee), *Pippali (Piper longum Linn.)*, *Sharkara* (candy sugar) (8). In this formulation, *Amalaki* powder was levigated with *Amalaki juice* for 21 times followed by drying. The dried mixture was mixed with *pippali* powder, honey, ghee and sugar in respective quantities. Its container was kept immersed in *bhasma rashi* (~ ash of cow dung) for 4 months. The detailed procedure is mentioned in figure no. 1. All the

ingredients of *Amalaki Rasayan* have been proven for a variety of activities which is elaborated in table no. 1

Figure 1: Pictorial presentation of the detailed step-wise preparation of Amalaki Rasayana



Sr.no.	Drug	Proven actions, properties	Reference.
1	<i>Amalaki (Phyllanthus emblica Linn.)</i>	Cardio-protective, anti-oxidant, anti-inflammatory, gastro-protective, analgesic and antipyretic, Immunomodulatory, free radical scavenging, and anti-mutagenic activity. Rich source of Vitamin C.	(9)
2	<i>Pippali (Piper longum Linn.)</i>	Anti-inflammatory, anti-viral and Immunomodulatory activity.	(10)
3	Honey	Anti-oxidant, anti-inflammatory, anti-microbial, anti-bacterial, and anti-viral. Also, honey is beneficial for wound healing and cough-reducing properties.	(11)
4	<i>Goghrita</i> (Cows ghee)	Improves functions of <i>dhee</i> (~ memory), <i>smriti</i> (~intellect), <i>medha</i> (~intelligence), <i>agnivardhak</i> (~ increases digestive power), <i>balavardhak</i> (~strength) and it can be administered in children as well as in old age people.	(12)
5	<i>Sharkara</i> (Candy sugar)	Beneficial in <i>vata-pitta vyadhi</i> and bleeding disorders, and burning sensations.	(13)

Thus, considering all the factors, *Amalaki Rasayana* is expected to have a cumulative effect on long COVID.

Patient information

A 50-year-old male, presented at the OPD on 23 April 2021 for chief complaints of fatigue without exertion, dry cough, anorexia, recurrent burning sensation, arthralgia (pain and inflammation at the ankle joint especially increased in the morning), dyspnoea, constipation, since June 2021.

Relevant details of history

The patient showed symptoms such as fever with chills, anorexia, body aches, and mild breathlessness mMrc (Modified Medical Research Council) grade 2 from 19 April 2021. RT-PCR (Reverse transcriptase-polymerase chain reaction) was found to be positive on 22 April 2021. He was admitted to the Hospital on 2/04/2021. His oxygen saturation dropped near about 93% on RA (Room Air) during the initial first two days. There was no history of any comorbidity like diabetes, hypotension or hyperthyroidism, hypertension and other medical illnesses. He was treated by allopathic

treatment in IPD for 20 days. His X-ray chest (Posterior Anterior view) shows patchy opacities in B/L lungs, and other inflammatory markers like C-reactive protein (CRP), Ferritin, D-Dimer, TLC (Total leucocyte count), ESR (Erythrocyte sedimentation rate) increased at the acute stage of COVID-19 only (on 1st day of admission). RT PCR negative on 11/05/2021 and the patient was shifted to a non-COVID ward.

Detailed history of present illness

The patient was admitted at the Hospital for almost one month for Active COVID-19 Pneumonia. Symptoms of acute COVID-19 such as fever, dyspnoea, breathlessness, dry cough, subsided but fatigue without exertion, anorexia, and constipation persisted and developed other symptoms like joint pain, continued mild headache. He again consulted for allopathic treatment, but he was advised of symptomatic treatment. He got relief but as soon as medications stopped, symptoms again aggravated. Hence, he consulted for Ayurvedic medications. It is relevant to report this history as it may be related to present complaints.

Treatment history

During the COVID-19 infection, in IPD, the following drugs were administered viz. Favipiravir 800 mg for 11 days, Vitamin C 500mg BD, tab. Pulmoclear 650mg (Acetylcysteine 600mg + Acebrophylline 50 mg), Tab. Paracetamol 650 (SOS), Syp. Duphalac (Lactulose) 15ml, multivitamin tablet, Inj. Ceftriaxone 1gm BD, Inj. Panteprazol and domperidone(Pan-D) 4mg BD, Inj. Dexamethasone 4mg BD, Inj. Enoxaparin sodium injection (Clexane) 0.6 mg OD for 13 days.

After 13 days of treatment, the patient was shifted to a higher allopathic centre in Pune for further treatment. He was treated with Remdesivir for 5 days, Inj. Ceftriaxone 1GM BD for 5 days, Inj. Pentaprazol 40 mg BD for 5 days, Inj. Enoxaparin sodium injection 0.6 BD for 5 days. Tab. Methylprednisolone 6 mg BD for 6 days, Vitamin C BD, Tab. Acetylcysteine 600 mg BD, Zinc and B complex tablet OD, Budesonide 200 mcg 2 puff BD for 5 days. He was discharged, however, he developed post-COVID symptoms as elaborated in clinical findings. There were no Ayurvedic interventions.

Family history

The patient's wife and two children got infected at the same time. There was no significant history on the maternal and paternal side.

Clinical findings

When the patient came to Ayurvedic OPD, he had severe symptoms of post COVID arthralgia. There was fatigue on exertion, pain and inflammation at ankle joints, mild anorexia, continuous mild headache, mild dyspnoea, constipation, and burning sensation. The examination of the patient at the post-COVID clinic.

General examination

His *nadi* (~examination of pulse) was *vata-pittaj* (~ predominance of *vata* and *pitta*), Respiratory rate was 18/min, SPO2 was 96% on room air, heart rate was 76/min, blood pressure was 110/70 mmhg, temperature was 98.f, *koshtha* (~ nature of bowel) was *krura* (~irregular nature of bowel)

Ashtavidha pariksha (~ Eight-fold examination)

Patient *netra* (~eyes) was *prakruta* (~ normal), *shabda* (~voice) was *prakrut*, *sparsha* (~touch) was *anushna* (~ neither hot nor cold), *mala* (~bowel) was irregular, hard and one time per day. *mutra* (~urine) frequency was 2 to 3 times per day. *jivha* (~tongue) was *saam* and the *akruti* (~physical structure) were *madhyam* (~medium)

Systemic examination

On examination it was seen that air entry and bilateral entry were normal, no abnormal lung sound, no pallor & icterus, P/A abdomen was normal, the cardiovascular and central nervous system was normal, No Hepato-splenomegaly seen, and Mild tenderness and inflammation at the ankle joint.

Timeline

Table 2: The timeline of the present case is depicted

Date	Events
22 April 2021	RT-PCR Positive
23 April 2021	Admitted at allopathic hospital
23 April – 3 May 2021	Oxygen saturation was 91%, and hence patient was given 4 litre Oxygen.
11 May 2021	RT-PCR – Negative (Patient shifted to non-COVID ward)
20 May 2021	Discharged
3 May 2022	The patient visited the Ayurved OPD with post-COVID symptoms.
3 May – 9 May 2022	Prescribed <i>Haritakyadi yoga</i> (5 gm) with warm water HS (bedtime) for 7 days prior to <i>Amalaki Rasayana</i> for mild laxation
10 May – 10 June 2022	Prescribed <i>Amalaki Rasayana</i> (10 gm) at <i>Rasayana kal</i> (Early morning on empty stomach) for next 30 days after mild laxative

RT-PCR: Reverse transcriptase-polymerase chain reaction; OPD: Outpatient department

Diagnostic assessment

The symptoms were assessed by subjective parameters with a 6-minute walk test (14),WHO-Wellbeing index scale (15),severity of signs and symptoms of long COVID.

Therapeutic interventions

Informed written consent of the patient was taken before treatment. The patient was prescribed to take 5gm of *Haritakyadi* powder with warm water at bedtime for 7 days as per his *krur koshtha* (~specific bowel habit). After attaining *mrudu anuloman* (~mild laxative action), 10 grams of *Amalaki Rasayana* on an empty stomach in the early morning for next 30 days was prescribed.

The follow-up was taken on 0th, 15th, and 30thS day after receiving the *Amalaki Rasayana*. On the day 30, the assessment was done using the WHO Well-being scale(15), clinical signs and symptoms. Furthermore, the patient was asked to stop the allopathic treatment which he was taking previously.

Follow-up outcomes

After 30 days of treatment, complete improvement was observed in sign symptoms, 6-minute walk test (15) and WHO-well-being scale (16). Scales were described in following table no. 3, 4,5 and 6. None of the symptoms was relapsed during the follow-up period.

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Table 3: Observation during follow-up in signs and symptoms

Symptoms	Grade	At the time of recruiting (0th day Observations) [10 th May 2022]	First, follow up (15th day after treatment) [25 th May 2022]	Second, follow-up (30th day after treatment) [10 th June 2022]
Fatigue	None (0) Occasional (1) On exertion (2) Persistent (3)	3	2	1
Anorexia	None (0) Mild (1) Moderate (2) Severe (3)	2	1	0
Continues headache	None (0) Mild (1) Moderate (2) Severe (3)	1	0	0
Joint pain	None (0) Mild (1) Moderate (2) Severe (3)	2	2	1
Anxiety	None (0) Mild (1) Moderate (2) Severe (3) Very severe (4)	1	1	0
Dyspnoea	None (0) Mild (1) Moderate (2) Severe (3)	2	1	0

Table 4: Six-minute walk test during follow-up (14)

Parameter	At the time of recruiting (After mild laxation)	1st Follow-up	2nd Follow-up
SPO2 (% on room air)	96	98	98
SPO2 (After six min walk test) (% on room)	96	98	98
Respiratory Rate (/min)	18	18	16
RR after 6 min walk test (/min)	20	18	16
HR (/min)	76	80	82
HR after 6 min walk test (/min)	81	84	86
Body Temperature	Afebrile	Afebrile	Afebrile

Table 5: WHO-Wellbeing index scale (15)

		All of the time	Most of the time	More than half of the time	Less than half of the time	Some of the time	At no time
WHO 1	I have felt cheerful in good	5	4	3	2	1	0
WHO 2	I have felt calm and relaxed	5	4	3	2	1	0
WHO 3	I have felt active and vigorous	5	4	3	2	1	0
WHO 4	I woke up feeling fresh and	5	4	3	2	1	0
WHO 5	My daily life has been filled with things that interest me	5	4	3	2	1	0

Table 6: Observations of WHO- well-being scale during follow-up

WHO Well Being index score	0th day	Follow-up 1	Follow-up 2
Patient score	8/25	19/25	22/25

As depicted in Table No. 3 there was a reduction in the score of fatigue, anorexia, continued headache, joint pain, anxiety, and dyspnoea in 1 month of treatment. Table 6 shows the WHO well-being score of the patient enhanced from 8 to 22 in 30 days after treatment using *Amalaki Rasayana*.

Discussion

The present case was treated by Ayurvedic medicines at post COVID infestation stage. The line of treatment was oral administration of mild laxative drug *haritakyadi* powder followed by administration of oral semisolid formulation *Amalaki Rasayan*. This patient

had a history of COVID-19 infection and a long hospitalization of 29 days. The current diagnosis of this patient was newly developed arthralgia with the post-COVID syndrome. Additionally, diminution of digestive capacity, diminution of body weight is prominently evident in post COVID syndrome which hampers function of digestive system, vitiates *tridoshas* especially *vata*. As per the concepts of Ayurveda, arthralgia is consequence of vitiated *ama* and *vata* by involving *koshtha* (~GIT), *sandhi* (~joints), and *trika* (~lumbar and sacral spines) which creates pain and swelling in joints, stiffness of joints, and other post COVID symptoms like anorexia, fatigue, fatigue without exertion, dyspnoea, weakness, etc.

The *Rasayana chikitsa* is a speciality of Ayurved which is meant for stabilizing the youthful age, promoting life span, strength, enhances immunity and eradicate the disease conditions. Also, *acharya charak* has quoted the importance of rasayan that it promotes longevity, intellect, free from diseases, youthfulness, provides lustre, strength, etc.(16). A variety of research based on rasayan (~ immunomodulatory drugs) states that the rejuvenation drugs like *amla* (*Emblica officinalis* Linn.) have been proven for their activities like antioxidant, immunomodulatory, anti-inflammatory, cytoprotective, etc. (17)

Amalaki Rasayan from *Charak Samhita* is specifically indicated in *pranavaha strotas dushti* (~Respiratory system) and associated symptoms like fatigue, fatigue without exertion, anorexia, dizziness, etc. (8). The unique processing while preparation of *Amalaki Rasayana* is in turn responsible for imparting the clinical benefits to patients. The process of *koshtha shuddhi* is important before administration of *Rasayana chikitsa* with rejuvenating drugs; as it helps to eliminate the morbid factors accumulated in the entire body but also ensures the better absorption of the *Rasayana* drug.

The *Amalaki Rasayan* consists of *Amalaki* (*Phyllanthus emblica* Linn.), *pippali* (*Piper longum* Linn.), honey, cows' ghee, candy sugar. *Amalaki* is known to possess five rasa ie tastes viz sweet, sour, astringent, bitter and pungent and hence it is capable of carrying out a pharmacological impact for enhancing health (18). The five tastes of *amalaki* and mainly sour and astringent are predominantly expressed in *Amalaki Rasayan* due to 21 times levigation of *amalaki* powder by *amalaki* juice. The sour taste enhances digestive fire, decreases the vitiation of *tridoshas*, strengthens the heart. *Piper longum* Linn. is pungent and bitter in taste, sharp, and it enhances digestion and metabolism and it is helpful in alleviating *ama* from the body which is a basic pathological factor for the arthralgia and other symptoms. *Pippali* is one of the best rejuvenating herb for respiratory system which helps correcting dyspnoea (19). Candy sugar is sweet in taste, cold in potency and hence alleviates *vata* *pitta* *dosha* which helps in reducing burning sensation of patients and provides nourishment (13). Cow's ghee is one of the best immunomodulatory, and it enhances the mental abilities and digestive capacity, along with being nourishing for the body. It also possesses healing properties(12). Honey is sweet, *Yogvahi* light and it is the best medicine

for removing *kapha* as per Ayurvedic concepts(20). Thus, *Amalaki Rasayana* was found to be helpful in treating weak digestive system which is a basic pathological factor, and weakness. It balances *tridoshas* (~three regulatory functional factor of the body). Because of all these synergistic effects of all ingredients, it plays an important role in reversing the pathology of Post COVID arthralgia and reducing symptoms of post COVID.

In this case prior to administration of *Amalaki Rasayana*, mild laxative for 7 days was induced using *Haritakyadi yoga*. *Haritakyadi yoga* is mentioned in *Charak Samhita Rasayan adhyaya* and it's recommended before *Rasayana chikitsa*. The *Haritakyadi yoga* comprises drugs like *Haritaki* (*Terminalia chebulla* Retz.), *saindhav* (Rock salt), *Amalaki* (*Phyllanthus emblica* Linn.), *guda* (jaggery), *vacha* (*Acorus calamus*), *vidang* (*Embelia ribes*), *haridra* (*Curcuma longa* Linn.), *pippali* (*Piper longum* Linn.), *shunthi* (*Zingiber officinale*) in equal quantities. Majority of drugs show pungent, bitter in taste, hot potency nature and possess properties like carminative, enhance digestive capacity, and mild laxative(21). All these properties of *haritkyadi* powder help in enhancing digestive power, digest *apkwā mala* (~undigested part) the laxative medicine helps to normalize obstructed *vata* by bringing it into normal direction (i.e *anuloma gati*). It stimulated the bowel to relieve constipation and removed accumulated toxins from the bowels which is required prior to *Rasayan* therapy for better absorption. Ayurved stresses on the proper functioning of the gut and removal of accumulated toxins for better health, and hence the laxative medicines of various types are used in Ayurvedic treatments. The large bowel is the place of action of *apana vata*. Controlling the *vata* helps in treating diseases and for rejuvenation.

A significant improvement was seen in the well-being score after the treatment with *Amalaki Rasayan*. As *acharya Sushruta* defined, health is the state of equilibrium of *tridosha* (~ three regulatory factors of body), *agni* (~ digestive factor), *dhatu* (~ seven major structural component of body), *mala* (~ waste products), and the sense organ, soul and mind in blissful state. This may be achieved due to the synergistic effect of *Haritakyadi yoga* and *Amalaki Rasayan* which helped in correcting functions of *dosha*, *agni*, *mala* and all these responsible for a healthy state.

Post COVID conditions are heterogeneous and may be attributed to different underlying pathogenic process such as long-term tissue damage, autoimmune dysfunction, increased proinflammatory cytokines, gut dysbiosis, impaired immunity, prolonged SARS-CoV2 shedding in respiratory tract, feces, small intestine up to 4 months. All these phenomena are linked with each other and may contribute to the varieties of post COVID symptoms (22). *Amalaki Rasayana* has also proven cardioprotective (23), immunostimulant and cytoprotective activity(24). AR also shows reduction in DNA damage in rat brain cells (25), increased telomere activity with no changes in telomere length (26), improved memory and neuronal metabolic activity in Alzheimer's disease(27), AR showed stable

maintenance of DNA strand break repair without toxic effects(28). All these properties of *Amalaki Rasayan* may contribute to reducing post COVID symptoms.

Conclusion

The treatment using *Haritakyadi yoga* followed by *Amalaki Rasayana* improved the general well-being of the patient and reduced post-COVID arthralgia and other symptoms such as fatigue, anorexia, joint pain, headache, and dyspnoea on exertion, ankle swelling and constipation. It is evident that *Amalaki Rasayana* can play a role in rejuvenation for post-COVID patients. The result can be further validated after the conduction of a clinical trial in a significant number of patients. There were no adverse drug effects and the formulation was very well tolerated and well-accepted by the patient.

Patient Perspective

Patient-reported complete symptomatic relief, able to perform his all-daily activities without any hesitation. He starts feeling fresh, active, and calm after taking medications. As he started Ayurvedic treatment, daily improvement was seen in his condition. Furthermore, he stopped consuming allopathic medicine. Now he is a regular seeker of Ayurvedic medicine.

Declaration of Patient Consent

Authors certify that they have obtained the patient consent form, where the patient has given his consent for reporting the case in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity.

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