

# Prediction of Diarrhoea as a Dominant Symptom in Third Wave of COVID-19: An Ayurvedic Perspective

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**Abstract:** In Ayurveda literature, the probable pathogenesis of diarrhoea (Atisara) is to over-drinking and humidity in the atmosphere. During rainy season humidity increases in the atmosphere and human body being a biological entity behaves accordingly. From the month of July up to the mid of September rainy season persists, in which while there is a lot of humidity in the atmosphere along with increase in temperature (in Indian climate) Human body tends to sweat more and drink more. Over-drinking water or liquid diet, leads to agnimandya (decreased digestive fire) initiating the basic pathophysiology of diarrhoea, the slow collection of all the hetu (causative factors) of diarrhoea leads to the increasing pathogenesis or prodromal, along with it, in the months of rain & post-rain (starting of Autumn) weather, with scorching heat, Vata & Pitta (humors) increases respectively. Current researches on COVID-19 additionally well-known shows that SARS-CoV-2 can develop alterations in the gastrointestinal microbiota which can also cause increase in gut motility inflicting Diarrhoea. So, the entire pathophysiology will dominantly result in diarrhoea with a very small push of other stimulus (viral, bacterial, food poisoning). Hence, there is lots of chance that the wave of corona if in any respect has to come then it will come from June to October month and will show high chance of viral diarrhoea.

**Keywords:** Varsha, Sharad pitta, Bata vriddhi, atyambupana, diarrhoea

## 1. Introduction

In SARS CoV-2 infection, occurred in 2019, the most common symptoms were ranged from fever, dry cough, and dyspnoea to pneumonia, pulmonary oedema, acute respiratory distress syndrome, and multiple organ failures, requiring hospitalization in intensive care unit leading to death in severe cases [6]. Less common symptoms include headache, haemoptysis, nausea, vomiting, and diarrhoea [7]. Clinical studies show an incidence rate of diarrhoea ranging from 2% to 50% of cases. It may precede or trail respiratory symptoms. A pooled analysis revealed an overall percentage of diarrhoea onset of 10.4%. COVID-19 epidemiologic data in children in an analysis of 171 children with a median age of 6.7 years, diarrhoea was reported in 8.8% of cases [8].

As of a fear of third wave of COVID-19, Child specialist warn about gastrointestinal problems in children as an extended complication. The experts said that third wave of Covid is likely to impact children more severely, they have advised keeping a lookout for symptoms like abdominal pain, vomiting, loose motion, appetite loss and so with or without low-grade fever. Many doctors contended that cases of diarrhoea may occur in the phase between May - End to June first week which might prove to be fatal, as the ACE-2 receptor is present in the intestine, especially the small intestines which increases the chances of infection through faecal-oral route triggering pain in abdomen and vomiting.

In Varsha and Sharada Ritu the symptoms of diarrhoea may occur in any age group. These Varsha and Sharada Ritu extends from mid-July to mid-November. In year 2021 Shrivana month is starting from 24<sup>th</sup> July which is beginning of Varsha Ritu and 19<sup>th</sup> November is the end date

of Kartika month which is the end point of the Sharada Ritu [9].

3<sup>rd</sup> wave of COVID-19 which is expected to come soon, may bring diarrhoea as a prominent symptom and this COVID wave can appear in this time period. These seasons may motivate the patho-physiology of diarrhoea as narrated by Acharyas in Ayurvedic text.

## 2. Literary Review

According to Ayurveda the end of July 2021 will be the transitional period of *Adaana Kaala* and *Visarga Kaala*. Acharya Charaka has explained that in *Adaana Kaala/Uttaryana* or Northern Solstice, the sun and wind are powerful. The energy and strength of people drops so as the quality of the Earth. This *Greeshma Ritu* (Summer Season) is the last *Ritu* of *Adaana kala*. The Energy and strength of people are minimal in this Season. The sun with his rays, draws up the moisture of the nature excessively [10].

In the body weakened during *Adaana Kaala*, the *Jathragni* (digestion) also becomes poor. In *Varsha Ritu* weakened body with poor digestion when further disturbed by *Vataadidosha*, *jathragni* gets weak progressively due to seasonal effect. Due to earth vapour, humidity of clouds and *Amla paka* of water, the power of digestion is weakened and *Vataadidosha* are aggravated during the rainy season [11].

Acharya *Susruta* explained that in rainy season the sky becomes overcast with clouds, and the wind, charged with an excess of humidity, dulls the appetite and organisms of beings. The food and vitiated water taken during this season, accumulates acid in digestive reactions of human being and

cause *sanchaya* (accumulation) of pitta. In autumn season the sky becomes cloudless, the marsh is dried up, and the bile originated and accumulated during the rains, is liquefied by the rays of the sun and gives rise to *Pittaja Vikara*<sup>[2]</sup>.

Acharya *Charaka* also mentioned that during autumn, the persons having adjusted to rains and cold are suddenly subjected to the heat of the sunrays which leads to aggravation of the accumulated *Pitta*<sup>[11]</sup>.

These micro and macro changes that occurs during *Visarga kaala* leads to pathophysiology of *Atisara*.

Exposure to the excessively strong wind, hot sun and physical exercise; Indulgence in unctuous food or less quantity of food or irregular meals (*pramitasana*) or strong alcoholic drinks or excessive sexual intercourse and; suppression of natural urges is *Nidana* of *Vataja Atisara*<sup>[12]</sup>.

Because of the above-mentioned factors, the *Vayu* gets aggravated and the power of digestion (*agni*) gets afflicted. After the loss of the power of digestion the aggravated *Vayu* forcefully brings down the urine and sweat to the colon (*purishashaya*), and with the help of these (urine and sweat) liquifies the stool, causing *Vataja Atisara*<sup>[12]</sup>.

Affliction of the body by excessive exposure to the heat of strong (*pratata*) fire, hot rays of the sun and hot wind; *Pitta* gets aggravated. This aggravated *Pitta* on account of its liquidity suppresses the power of *agni* (power of digestion), and when arrived at the colon, it disintegrates the stool because of its heat, liquidity and mobility thereby causing *Paittika* type of *Atisara* (diarrhoea)<sup>[13]</sup>.

Acharya *Vagbhatta* has mentioned ‘*Atyambupana*’ as first *nidana* of *Atisara*, including other causative factors for vitiation of *Vatadosha*. This *Vatadosha* moves *Jaliya dhatu* (*Rasa, Rakta, Meda, Majja, Mutra, Sweda, Pittadika*) downwards and it diminish *esagni* and irritate *koshtha* (antra) which leads to drenching of faecal matter causing diarrhoea<sup>[14]</sup>.

Acharya *Susruta* has also mentioned ‘*dushtatyambumaddpanata*’ i.e excessive drinking of vitiated water and alcohol as a causative factor of *Atisara*. Other than

this he has mentioned ‘*jalatiramadaya*’ i.e. excessive water activities may cause *Atisara*<sup>[11]</sup>. *Yogaratanakara* also has same narration<sup>[15]</sup>.

**Effect of Covid on Gut Flora**

Many investigations have already proved that infestation of SARS-CoV-2 can alter the gastrointestinal microbiota. It includes the reduction of *Faecalibacteriumprausnitzii*, *Eubacterium rectale*, and *bifidobacterial* and other short chain fatty acid producing bacteria from gut flora. This reduction may cause increase in opportunistic pathogens. The microbiota is essential for the development of human immune response and can influence both local and non-local immune responses<sup>[5]</sup>. This viral and bacterial load in intestine may also increase gut motility, causing Diarrhoea as symptom.

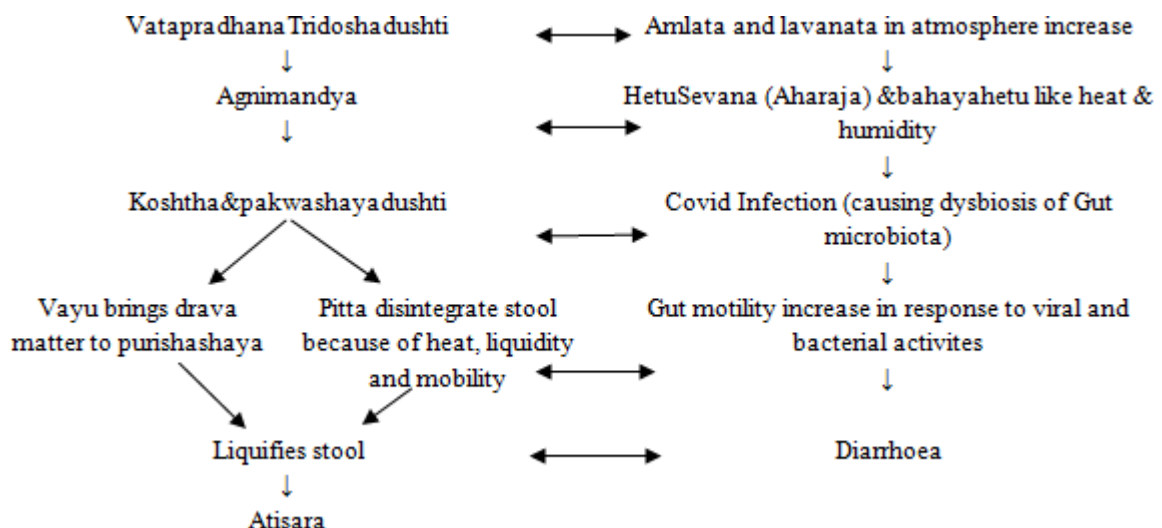
The proliferation or reduction in certain microorganisms can increase the stimulation of innate immune receptors. The stimulation of this receptor triggers several pro-inflammatory signals and the production of cytokine and chemokine, which modulate the adaptive immune system, influencing both local and systemic immune response, such as gut-lung axis. Thus, alteration in gut microbiota can also modulate the development of respiratory disease<sup>[5]</sup>.

**3. Discussion**

As we have quoted various *Nidana* of *Atisara* and effect of season on human body that can cause pathological changes in human body leading to *Atisara*. Changes in atmospheric heat and humidity according to upcoming season along with viral infestation of SARS-CoV-2 may cause upcoming wave of COVID with Diarrhoea as a predominant symptom.

The *Amla* and *Lavanaguna* in water are increased in *Varsha* and *Sharada Ritu* respectively. This vitiation of water along with other *nidana* like hot and humid environment, *Vata* and *Pitta* mitigating food consumption & excessive water activities can develop Symptoms of Diarrhoea.

*Atisarasamprapti* and Probable pathology of Diarrhoea in Covid can be corelated as follows



#### 4. Conclusion

The above discussed pathogenesis is ayurvedic reflection of genesis of pathology and its possible outburst in form of diarrhoea. Ayurvedic pathophysiology goes by acute and chronic ignition factors (*Sannikrishta* and *Viprakrishta Nidana*). Also, with it COVID-19 patient who have undergone treatments have already shown diarrhoea as an uncommon symptom but its infection may cause long term consequencesing astrointestinal homeostasis<sup>[5]</sup>. This disturbed homeostasis of Gastrointestinal tract can be corelated with *Grahni* disease explained after Atisara in Ashtanghrdaya. It can be managed with treatment protocol of *Grahini*. Patients with diarrhoea showed prolonged COVID effect and the stool samples from these patients were more frequently found positive for virus RNA<sup>[5]</sup>. This could also commence faeco-oral transmission of virus. So, if at all in the above-mentioned time period, a wave comes it has high probability to have diarrhoea as a strong and frequent symptom in children as well as adult. So, we need to prepare to tackle this condition and also to control its faeco-oral transmission if it occurs.

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