



## COVID 19 DISEASE IN CHILDREN INSIGHT THROUGH AYURVEDA

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### ABSTRACT

Coronavirus outbreaks affect all segments of the population. Children of all ages are affected by the disease. As children are a more vulnerable population, the impact of the disease is also more. They are so delicate and cannot withstand vigorous treatment modalities; this highlights the importance of precautionary measures in this age group. In Ayurveda, infectious diseases in children are considered an invasion of *balagraha*. While going through the clinical features of coronavirus disease in children it can be compared with the affliction of *Pitrigraha*. This conceptual study aims to understand the specific effect of covid in children as the invasion of *pitrigraha*.

**Keywords:** Coronavirus, *Bala Graha*, *Pitrigraha*

### I. INTRODUCTION

Coronaviruses are nowadays increasingly considered important human pathogens. They cause up to 15% of common cold and have been associated with more severe forms including asthma, croup, bronchiolitis, and pneumonia. In neonates and infants, it may cause enteritis or colitis. In humans there are 4 endemic types of coronaviruses present, they are human coronaviruses (HCoVs)229E, OC43, NL63, and HKU1. In addition, now identified epidemics of SARS-associated coronavirus, and Middle East respiratory syndrome coronavirus, which cause significant respiratory distress and high mortality rates in affected individuals.

50% of respiratory tract infections caused due to OC43 and 229E are asymptomatic, but they are still responsible for producing symptoms of cold in 15% of patients and may lead to fatality. Symptoms of HCoVs are indistinguishable from those caused by rhinoviruses and other respiratory viruses. The average incubation period is 2- 4 days, and symptoms typically last about 4- 7 days. Rhinorrhea, dry cough, sore throat, malaise, myalgia, headache, chills, and rigors are the most common symptoms of coronavirus disease. Fever is seen in about 60 % of cases. In asthmatic children, it may lead to episodes of wheezing. In immunocompromised children, it leads to lower respiratory tract infection, bronchiolitis, pneumonia, and respiratory distress. In young children, symptoms of gastrointestinal tracts such as diarrhea, vomiting, bloody stools, abdominal distention, and classic necrotizing enterocolitis can be seen[1].

*Graharogas* are the special topics that comprise the major portion of Pediatrics (*kaumarabhritya*). These are those entities that attack the body or hold the body but are invisible by naked eyes. *Graharogas* have hidden causes with severe clinical manifestation and aggressive treatment should be employed with early diagnosis [2]. The present work uses the concept of *balagraha* to explain the pathogenesis of covid- 19 in children. This study identifies it as an invasion of *pitrigraha* (one of the *balagraha*) and also mentions preventive and curative measures for the disease.

### II. REVIEW OF LITERATURE

#### Concept of *balagraha* in Ayurveda

*Graharogas* is a special disorder in Ayurveda pediatrics (*balachikitsa*). Manifestation of symptoms, pathology, and complications are very fast with more difficulties in diagnosis and treatment, which differentiate *graharogas* from other pediatric ailments. Ayurveda strongly believes that for any effect (*Karya*) there should be a cause (*Karana*) that may be either visible or invisible. In modern science disease without a cause is mentioned as idiopathic, but Ayurveda which believes in the cause–effect theory (*Karya-*

*karanavada*) can't agree with this concept, and such diseases are included under *Graharoga*, diseases of pregnant women (*Jataharni*), diseases due to vitiation of sperm and ovum (*Adibalapapravrittha vyadhis*) and diseases due to improper dietetics and lifestyle of pregnant women (*janmabalapapravrttavyadhis*)<sup>[3]</sup>.

*Grahas* are living organism as they attack and seize others. They are invisible by naked eye and needs special visual aids to visualise it. As they are invisible, they may be microscopic or unicellular in nature. Acharya Vagbata mentiones 12 *balagraha*. These are *Skandagraha*, *Vishakagraha*, *Sakunigraha*, *Putanagraha*, *Seetaputha*, *Andhaputana*, *Naigamesha*, *Revati*, *Shushkarevati*, *Mukamandika*, *svagraha*, and *pitrugraha*. Each *graha* has different morphological structures and diseases causing by each of them are also different<sup>[4]</sup>.

Infectious diseases are the type of disorders that are caused by a microorganism such as viruses, bacteria, fungi, or parasites and these can spread in between individuals. These can spread from person to person and cause diseases either by disrupting normal processes or stimulating the immune system to produce a defensive response, resulting in high fever, inflammation, and other symptoms. Similarly, *grahas* are entities that are invisible to naked eyes and show premonitory symptoms like fever (*jwara*) and constant crying (*pratamatrodhanam*). These *grahas* can frequently change their size and shape as per their needs. By considering the above statements we can assume that *grahas* are living entities microscopic in nature. Hence we can compare infectious diseases in children with *balagrahabada*.

### The Similarity between *balagraha* and microorganisms<sup>[5]</sup>

**Table: 1 Similarity between *balagraha* and micro organisms**

Nature	<i>Graharogas</i>	Micro- organisms
Living	Living, as they can move and attack	Living organisms
Prone time of movement	Night hours ( <i>nisachara</i> )	Low temperature and high humidity areas can be better compared with the night time.
Method of invasion	Seize the body and causes hidden diseases.	The entry of pathogenic microorganisms can be identified only after the first symptoms
Method of invasion	Can't be identified like entry of soul ( <i>atma</i> ) inside the body	Follows definite incubation period
Size and shape	Can change size and shape as per demand	Pass through different stages of life and undergo mutations.
Generalized/ Localised	Symptoms of both body & mind	Generalized symptoms
Presence of fever	Fever( <i>Jwara</i> ) is mentioned as a premonitory symptom of <i>grahabaadha</i>	Usually, fever is the first symptom. This suggests an infectious origin.
Visibility	Invisible and can be visible only through certain visual aids or special visual power	Invisible by naked eyes-visible by microscopes
Portal of entry	Enter the human body that follows iniquity ( <i>adarma</i> ). Not following general conduct ( <i>Sadvrittaaparipalana</i> ) can be compared with a lack of cleanliness.	Immune deficient patients, unhygienic conditions, over crowding
Diagnosis	Diagnosis is difficult due to rapid onset, progression, and severity	Cannot possible without culture study.
Intention of entry	Tissue injury ( <i>himsa</i> ), completing life cycle( <i>rati</i> ), and nourishment ( <i>archana</i> ) are the three main intention of affliction	In search of the host to complete the life cycle, and get nourishment are the main intention of invasion of an organism
Outcome	Does protection ( <i>raksha</i> ) to the body	Infection provides immunity against a specific disease

## Covid 19 in children – Invasion of *Pitrigraham*<sup>[6]</sup>

*Pitrigraham* is one of the *balagraha* has been mentioned by *Vagbata*. Fever(*jwara*), cough(*kasa*), diarrhoea(*atisara*), vomiting(*chardi*), horripiltion(*romaharsha*), irritability(*trasa*), constant crying(*sahasrodhanam*), yawning(*jrmva*), thirst(*trit*), cadaveric smell(*savagandata*), convulsions(*angeshuakshepavikshepa*), emaciation(*sosha*), stiffness(*stamba*), and discolouration(*vivarnata*) are the symptoms(*lakshanam*) of *pitrigraha*. Similar symptoms can also seen in Covid 19 disease in children.

### Treatment<sup>[7]</sup>

#### ⊕ Isolation of child

In acute infectious diseases, the first line of treatment is isolation which helps to prevent the spread of infection. The same concept was mentioned in Ashtanga hridaya in the context of *grahachikitsa* with some extra-precautionary methods stating that prevention is better than cure.

#### ⊕ Igniting lamp with suitable oil

Studies proved that a warm environment seems to reduce the spread of the covid virus. By igniting the lamp environmental temperature will increases and give protection against the spread of the covid virus.

#### ⊕ Spreading room with auspicious things

It is advised to spread the area with auspicious things, flowers, leaves, seeds, prepared food, and white mustard (*sarshapa*). The antimicrobial properties of these drugs help to reduce the spread of infection.

#### ⊕ Fumigation

Fumigation (*doopana*) is a special procedure in which Ayurvedic drugs are made to burn in ghee (*ghrta*), oil (*taila*), or any kind of liquid medium. It helps to achieve environmental disinfection in such a way that on burning, the chemical agent of the drugs used gets converted into oxide form. These oxides which are freely available in the air help to clean the environment. Ayurvedic fumigation with natural plant products has a huge potential to address the problem of the spread of infectious diseases.

#### ⊕ Internal medicines

By considering the clinical features, *dosha* predominance (*Vata*, *Pitha*, *Kapha*) and the condition of the patient can select various Ayurvedic medicinal formulations for internal administration.

### III. DISCUSSION

Infectious diseases in children caused by microscopic organisms can compare with the invasion of *balagraha*. It is well understood that the infection by micro-organism in a healthy person will leave back certain immunity against the specific species and the presence of memory cells followed by infection reduces the severity of infection further. As we all know that viral infections are self-limiting, and covid-19 disease also shows mild symptoms in children compared with adults. This is because the presence of SRS-COV 2 receptor and angiotensin-converting enzyme 2 (ACE2) receptors are reduced in the respiratory tract of children, help2- T2immune responses are protective in children and children generally produce a lower level of inflammatory cytokines. In children fatality rate of Covid 19 disease is very low and only shows mild symptoms. After infection memory cells are developed in children and which reduces the severity of further infection. A similar concept was also seen in *grahabaadha*. The mythological origin of *grahas* suggests that these are produced by Lord Shiva for the protection of the health of people. Unrighteousness (*Adhrama*) is mentioned as the root cause of affliction of *graharogas*, which may be compared with not following rules of daily regimen (*dinacharya*), seasonal regimen (*rithucharya*), code of conduct (*sadvritta*), and healthy regimen (*swastavrittha*). These destroy the protective barrier of the body, and microorganisms or *grahas* invade the human body and become pathological. Moving around and taking continuous effort to invade the human or animal body is the basic nature of microorganisms or *grahas*. But the intact immune system which is supported by a healthy lifestyle, food, and habits following *swastavrittha*, *sadvritta* helps to prevent the entry of microorganisms and thus gives protection

### Comparison of covid -19 in children with invasion of *pitrigraha*

Manifestations caused due to invasion of *pitrigraha* are almost similar to the symptoms of corona virus in children.

- Fever, cough, vomiting, and diarrhoea –These are the symptoms of invasion of *pitrighraha*. These are also the predominant symptoms of corona virus in children. Studies proved that non respiratory symptoms are the first manifestation of corona virus disease in children. Gastro intestinal symptoms could be arising since the type of receptor in lung cell targeted by the virus can also be found in intestine. Virus infects people via ACE2 receptor, which is found in lungs, as well as intestine<sup>[8]</sup>. As these symptoms can be seen both disease, it can better compare with *pitrighraha*
- Horripilation, Irritability, thirst, yawning – These symptoms of *pitrighraha* can also be seen in corona infection in children. All these symptoms may arise due to complications of vomiting and diarrhea. A virus irritates intestinal cells leading to the release of sodium into the lumen and excretes out with water. Dehydration in children leads to thirst, yawning, irritability, and horripilation
- Eye infection (*Netrasrava*) – Children may experience eye-related symptoms of Covid – 19 more often than adults. Ocular manifestations like conjunctival discharge, eye rubbing, and conjunctival congestion are associated with the coronavirus. Anatomically eye is connected with the nasal passages through the nasolacrimal duct. This connection makes it possible for viruses to cause ocular manifestation which is commonly referred to as pink eyes. In the second wave of covid disease, it is also associated with infection with Mucormycosis (Black fungus)[9]. It is caused by exposure to mucor mould which is commonly found in soils, plants, manure, decaying fruits, and vegetables. When lungs get damaged and the immune system gets suppressed in covid afflicted patients, these spores get invaded in airways and sinuses. From there it can spread to the eyes and potentially causes blindness, headache, and seizures [10].
- Constant crying (*Sahasarodhanam*) – It may arise due to general non-wellbeing associated with fever, body ache, and stomach discomfort associated with corona disease.
- Convulsion (*angavikshepa*), closed fist (*mustibanda*), stiffness (*stamba*)– Neurological manifestations are associated with the Coronavirus. These viruses may invade the central nervous system through the olfactory bulb and leads to inflammation and demyelination. Within 7 days, the infection can spread into the whole brain and cerebrospinal fluid and manifest as febrile seizures, convulsions, change in mental status, encephalomyelitis, and encephalitis [11]. This can better be compared with *angavikshepa*, *mustibanda*, and *stamba* seen in *pitrighraha*.
- Discolourations (*Vivarnata*) – Cutaneous manifestations are associated with coronavirus disease. Following skin lesions such as morbilliform, pernio-like, urticarial, macular erythematous, vesicular, and papulo squamous types of rashes are associated with coronavirus diseases and can better compared with discoloration (*vivarnata*) seen in *pitrighraha*[12].
- Emaciation (*sosha*) –Severe covid infection in children may lead to acute malnutrition. Dehydration due to diarrhea may also contribute to acute malnutrition and may reduce growth velocity in children.

#### IV. RESULT

*Pitrighraha* is one of the types of *balagraha*. Fever, cough, diarrhea, vomiting, horripilation, irritability, constant crying, yawning, thirst, cadaveric smell, convulsions, emaciation, stiffness, and discoloration are the symptoms of *pitrighraha*. All these symptoms can be seen in covid infection in children. Respiratory, gastrointestinal, ocular, and CNS symptoms are associated with complicated covid in children. Almost all the symptoms of *pitrighrahada* and coronavirus disease are similar. So we can better compare it with *pitrighrahada* and can follow preventive measures such as isolation, fumigation with Ayurvedic herbs, and hygienic practices mentioned in Ayurvedic classics for preventing covid infection in children.

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