

# Gastrointestinal manifestations as early symptoms to diagnose COVID-19 paediatric cases

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**ABSTRACT****Background**

The international situation surrounding the COVID-19 pandemic is seeing multiple countries battle various waves of the SARS-CoV-2 virus infections, with millions of individuals being infected globally. COVID-19 cases initially involved the immunocompromised and elderly. As the virus has infected millions globally, the demographic profile of cases has shifted with more children being infected; this increase in younger individuals contracting the infection has resulted in new symptoms with altered manifestations and presentations of the disease in the young. In comparison to the severe symptoms of COVID-19 in adults children present with a more trivial group of symptoms. The majority of children develop mild symptoms or remain asymptomatic. This is in stark contrast to adults who have a higher admission rate with severe symptoms. A sign of great importance and now incidence in pediatric cases with COVID-19 is that of the gastrointestinal tract. The virus has a tropism for the GIT due to the presence of ACE2 receptors, which facilitate the entry of the virus into the cell.

**Conclusion**

It is now established that the GIT symptoms form part of a newly recognized multisystem inflammatory syndrome (MIS-C) which occurs as a result and or manifestation of the COVID-19 infection. The innate difficulty in correctly and accurately diagnosing such a case is that the symptoms very close mimic gastroenteritis and acute abdominal pathologies. Therefore, physicians need to be aware of the various manners in which the COVID-19 infection manifests itself in children to diagnose better and isolate the cases.

**Keywords**

Child, Clinical Decision-Making, Digestive, Pediatrics, SARS-COV-2, Signs and Symptoms

## Background

The virulence of the coronavirus is owed to its high transmissibility and its ability to not distinguish between race nor creed. The initial mainstay of the COVID-19 cases involved the immunocompromised elderly and individuals with concomitant comorbidities. As the virus has infected millions globally, the demographic profile of patients has shifted, with more children being infected [1]. In a study conducted by Dong Y, et al. reported out of 2135 pediatric patients who had contracted COVID-19, the median age was seven years. The pediatrics cases had a slight predisposition to boys, with 56.6% of the male cases [2]. In a multicentric international systematic review and meta-analysis that included 1214 pediatrics cases infected with COVID-19, the vast majority, specifically 474 and 720 stemmed from China and the USA. In parallel with the study conducted by Dong, Y et al. the 65% of the cases were of the male gender depicting the same preponderance [3].

## Symptoms of the SARS-CoV-2 infection

According to the severity, children present with a more trivial group of symptoms of COVID-19 when compared with adults. In a multicentric study conducted by Bhuiyan MU, et al. greater than 90% of children develop mild symptoms or remain asymptomatic, and only a very marginal 7% of cases require ICU treatment. This contrasts with adults who have an admission rate of 53% with severe symptoms [3,4]. If not asymptomatic in children, the infection manifests as nasal congestion, URTI, and a sore throat. Younger neonates suffer from obscure symptoms involving the GIT, such as nausea, vomiting, and diarrhoea. In more severe cases, ARDS develops with a host of metabolic dysfunctions and multi-organ failure [5].

## Gastrointestinal symptoms in paediatrics cases with COVID-19

A symptom of great importance and now incidence in paediatric cases with COVID-19 is that of the gastrointestinal tract. It has been demonstrated that faecal shedding of the virus occurs for extended periods, even post that of the nasopharyngeal shedding. The virus has a tropism for the GIT due to the presence of ACE2 receptors and transmembrane serine protease 2 proteins which facilitate the entry of the virus into the cell. It is documented that COVID-19 positive paediatric cases may present with nothing but pure gastrointestinal symptoms in roughly 10% of the cases and often do not suffer from any respiratory symptoms [5].

The GIT symptoms in paediatric COVID-19 cases span from nausea and vomiting (non-projectile and non-bilious) to abdominal pain, poor feeding, diarrhoea, and anorexia. It is now established that the GIT symptoms form part of a newly recognized multisystem inflammatory syndrome (MIS-C) which occurs as a result and or manifestation of

the COVID-19 infection. The other symptoms found in this syndrome are hyper inflammation and multiorgan failure. In a cohort of 44 patients presenting with the MIS-C syndrome, it was discovered that 84.1% presented with GIT symptoms, the most common, namely being abdominal pain. The innate difficulty in correctly and accurately diagnosing such a case is that the symptoms very close mimic gastroenteritis and acute abdominal pathologies. In light of this hazy clinical picture, it has been suggested that any such paediatric case with a raised CRP or ESR level and conjunctivitis should be suspected of having contracted COVID-19 [5,6].

## Treatment in children:

The mainstay treatment of COVID-19 in children under five years of age is IFN- $\alpha$  nebulization at a dosage of 2–4  $\mu\text{g}/\text{kg}$ . Abidol has been used, but its efficacy remains unclear. The use of lopinavir, chloroquine and ribavirin are contraindicated. Conventional anti-influenza therapy may be initialized if there is a concomitant influenza infection [7]. Diarrhoea can be treated with oral rehydration solution, fever with paracetamol. Hospitalizing is recommended in severe conditions.

## Conclusion

The infection, if acquired in children, is less severe than that in adults. The symptoms in children are often non-specific and involve the gastrointestinal tract; physicians need to be aware of the various manners in which the COVID-19 infection manifests itself in children. The prompt, specific treatment and management of such cases are therefore of paramount importance; the typical clinical symptoms and disease prognosis in children must be well understood and established to best safeguard our future generations.

## Abbreviation

Acute respiratory distress syndrome (ARDS), Angiotensin converting. Enzyme two (ACE 2), Coronavirus disease 2019 (COVID-19), C-reactive protein (CRP), Erythrocyte sedimentation rate (ESR), Gastrointestinal tract (GIT), Intensive care unit (ICU), Kilogram (Kg), Interferon alpha (IFN- $\alpha$ ), Microgram ( $\mu\text{g}$ ), Multisystem inflammatory syndrome (MIS-C), United states of America (USA), Upper respiratory tract infection (URTI), Severe acute respiratory syndrome coronavirus 2 (SARS-COV-2)

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- a. Study planning: JR, IB, AL
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- c. Manuscript revision: JR, IB, AL
- d. Final approval: JR, IB, AL
- e. Agreement to be accountable for all aspects of the work: JR, IB, AL

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