

**REVIEW ARTICLE**DOI: <https://doi.org/10.3329/mediscope.v7i2.49452>**Gastro Coronavirus: A new era****MA Ahad<sup>1</sup>****Abstract**

Coronavirus is a highly infectious contagious virus producing pandemic throughout the world with high morbidity and mortality. Right now, there is no vaccine to prevent human coronavirus infections. But you mayable to reduce your risk of getting or spreading an infection by-washing hands often with soap and water for at least 20 seconds,using an alcohol-based hand sanitizer that contains at least 70% alcohol if soap and water are not available, avoiding touching your face, nose, or mouth with unwashed hands,use of face mask, avoiding close contact with people who are sick.There is no specific treatment for coronavirus. Treatment aims to relieve the symptoms. Most people will get better on their own. However, you can relieve your symptoms by-taking over-the-counter medicines for pain, fever, and cough&plenty of nutritious diet, drinking fluids and taking rest.

**Keywords:** Novel coronavirus, Gastro coronavirus, Pandemic, Contagious, COVID-19, SARS, MERS.

**Introduction**

How many could be suffering from 'Gastro Corona Virus' - the version of the deadly bug no one is talking about.A persistent dry cough and fever are the two main symptoms we know to look for, but scientists have said Covid-19 can attack our digestive systems as well.Coronaviruses are a group of viruses that cause diseases in mammals and birds. In humans, the viruses cause respiratory infections which are typically mild, including the common cold; however, rarer forms such as SARS, MERS and the novel Coronavirus causing the current outbreak can be lethal. In cows and pigs they may cause diarrhoea, while in chickens they can cause an upper

respiratory disease. There are no vaccines or antiviral drugs that are approved for prevention or treatment.

Coronaviruses are viruses in the subfamily Orthocoronavirinae in the family Coronaviridae, in the order Nidovirales.<sup>1,2</sup> Coronaviruses are enveloped viruses with a positive-sense single-stranded RNA genome and with a nucleocapsid of helical symmetry. The genomic size of coronaviruses ranges from approximately 26 to 32 kilobases, the largest for an RNA virus. Human coronaviruses can cause -Severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome.

1. Professor Dr. Md. Abdul Ahad, Professor of Gastroenterology & Principal, Khulna Medical College, Khulna. Email: drahadbd@yahoo.com

## Novel Coronavirus (COVID-19)

### Discovery

Coronaviruses were discovered in the 1960s;<sup>3</sup> the earliest ones discovered were infectious bronchitis virus in chickens and two viruses from the nasal cavities of human patients with the common cold that were subsequently named human coronavirus 229E and human coronavirus OC43.<sup>4</sup> Other members of this family have since been identified, including SARS-CoV in 2003, HCoV NL63 in 2004, HKU1 in 2005, MERS-CoV in 2012, and 2019-NCoV in 2019; most of these have been involved in serious respiratory tract infections. In December 2019, a pneumonia outbreak was reported in Wuhan, China.<sup>5</sup> On 31 December 2019, the outbreak was traced to a novel strain of coronavirus, which was labeled as 2019-NCoV by the World Health Organization (WHO).<sup>6,7</sup> According to Daniel Lucey at Georgetown University, the first human infections must have occurred in November 2019 or earlier.<sup>8</sup> As of 30th January 2020 (16:00 UTC), there have been 214 confirmed deaths and more than 8,230 confirmed cases in the coronavirus pneumonia outbreak.<sup>9-12</sup> The Wuhan strain has been identified as a new strain of Betacoronavirus from group 2B with an ~70% genetic similarity to the SARS-CoV. The virus was suspected to have originated in snakes,<sup>13</sup> but many leading researchers disagree with this conclusion.<sup>14</sup> Daniel Lucey, an infectious disease specialist at Georgetown University, stated that "Now it seems clear that the seafood market is not the only origin of the virus"<sup>8,15</sup>

### Name and Morphology

The name "Coronavirus" is derived from the Latin corona, meaning crown or halo, which refers to the characteristic appearance of the virus particles (virions): by electron microscopy, which have a fringe of large, bulbous surface projections creating an image reminiscent of a royal crown or of the solar corona.<sup>16</sup> This morphology is created by the viral spike (S) peplomers, which are proteins that populate the surface of the virus and

determine host tropism.

### Transmissions

The main way the disease spreads is through respiratory droplets expelled by someone who is coughing.<sup>17</sup> When someone coughs or sneezes they spray small liquid droplets from their nose or mouth which may contain virus. If you are too close, you can breathe in the droplets, including the COVID-19 virus if the person coughing has the disease. The risk of catching COVID-19 from someone with no symptoms at all is very low. Infectious diseases are caused by pathogenic microorganisms, such as bacteria, viruses, parasites or fungi; the diseases can be spread, directly or indirectly, from one person to another.

Analysis of specimens taken from the gastrointestinal tract of 95 COVID-19 patients has identified the virus in the oesophagus, stomach, duodenum and rectum. The virus also showed up in about half of the stool samples collected. The suggestion is that the gastrointestinal symptoms are caused by the virus invading the ACE2-containing cells that are found throughout the bowel. This together with the presence of the virus in the stool suggest the gastrointestinal tract as another possible route of infection and transmission.<sup>18</sup> Current evidence on other coronavirus strains shows that while coronaviruses appear to be stable at low and freezing temperatures for a certain period, food hygiene and good food safety practices can prevent their transmission through food. People of all ages can be infected by the new coronavirus (2019-NCoV). Older people and people with pre-existing medical conditions (such as asthma, diabetes, heart disease, cancer) appear to be more vulnerable to becoming severely ill with the virus. WHO advises people of all ages to take steps to protect themselves from the virus, for example by following good hand hygiene and good respiratory hygiene.

### Human Coronaviruses

Coronaviruses are believed to cause a significant percentage of all common colds in human adults and children. Coronaviruses

cause colds with major symptoms, e.g. fever, sore throat, swollen adenoids, primarily in the winter and early spring seasons. Coronaviruses can cause pneumonia-either direct viral pneumonia or a secondary bacterial pneumonia. They can also cause bronchitis-either direct viral bronchitis or a secondary bacterial bronchitis<sup>19,20</sup> The much publicized human coronavirus discovered in 2003, SARS-CoV which causes severe acute respiratory syndrome (SARS), has a unique pathogenesis because it causes both upper and lower respiratory tract infections.<sup>21</sup>

### Gastro Coronavirus

Some people with the coronavirus have reported gastrointestinal symptoms including diarrhoea, nausea and vomiting. Estimates of how common these symptoms vary widely, from 1% to more than half of patients. For some people, the symptoms may be caused by prescribed antibiotics that can cause diarrhoea as a side effect. In fact, recent medical evidence from China and the United States also suggests there is a subset of gastrointestinal coronavirus patients who don't display the classic respiratory symptoms of the disease.<sup>18,22</sup> For both elderly patients and children, Mahboubfar says gastrointestinal symptoms include acute diarrhea, abdominal spasms, stomachaches, nausea vomiting, and the loss of appetite and sense of smell.

### Symptoms

The most common symptoms of COVID-19 are fever, tiredness, dry cough and breathing difficulties. Some patients may have headache, fatigue, aches and pains, nasal congestion, runny nose, sore throat or diarrhea with or without blood. Rare features are burning sensation in whole body, chills and rigor, cold body, new onset of severe anorexia and anosmia. Hepatic manifestations-the clinical presentation of COVID-19 may include hepatic manifestations such as acute hepatitis and abnormal liver biochemical tests.<sup>23</sup> These symptoms are usually mild and begin gradually. Some people become infected but don't develop any symptoms and

don't feel unwell. In more severe cases infection can cause pneumonia, severe acute respiratory syndrome, and even death. The period within which the symptoms would appear is 2-14 days.

### Diseases

When a disease is new, there is no vaccine until one is developed. It can take a number of years for a new vaccine to be developed. Novel Coronavirus, is a new strain that was discovered in 2019 and has not been previously identified in humans. Women with COVID-19 can breastfeed if they wish to do so. They should practice respiratory hygiene during feeding wearing a mask where available, washing hands before and after touching the baby & routine cleaning and disinfecting surfaces they have touched. The virus that causes COVID-19 and the one that caused the outbreak of Severe Acute Respiratory Syndrome (SARS) in 2003 are related to each other genetically, but the diseases they cause are quite different. We know it is possible for people of any age to be infected with the virus, but so far there are relatively few cases of COVID-19 reported among children. ICTV announced "severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)" as the name of the new virus on 11 February 2020.

Coronaviruses are zoonotic, meaning they are transmitted between animals and people. It is not certain, how long the virus that causes COVID-19 survives on surfaces, but it seems to behave like other coronaviruses. Studies suggest that coronaviruses (including preliminary information on the COVID-19 virus) may persist on surfaces for a few hours or up to several days. Globally, about 3.4% of reported COVID-19 cases have died. By comparison, seasonal flu generally kills far less than 1% of that infected. COVID-19 can be characterized as a pandemic. This is due to the rapid increase in the number of cases outside China over the past 2 weeks that has affected a growing number of countries. Cold weather and snow cannot kill the new coronavirus. There is no reason to believe that cold

weather can kill the new coronavirus or other diseases. COVID-19 virus can be transmitted in areas with hot and humid climates. From the evidence so far, the COVID-19 virus can be transmitted in all areas, including areas with hot and humid weather. Regardless of climate, adopt protective measures if you live in, or travel to an area reporting COVID-19. Coronaviruses are a large family of viruses that are known to cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS).<sup>21,24</sup>

Smokers are likely to be more vulnerable to COVID-19 as the act of smoking means that fingers (and possibly contaminated cigarettes) are in contact with lips which increases the possibility of transmission of virus from hand to mouth. Smokers may also already have lung disease or reduced lung capacity which would greatly increase risk of serious illness. Smoking products such as water pipes often involve the sharing of mouth pieces and hoses, which could facilitate the transmission of COVID-19 in communal and social settings.

### Gut invaders

It is interesting to note that the first case of novel coronavirus reported in the US had two days of nausea and vomiting and episodes of diarrhoea in addition to their respiratory symptoms. The virus was detected in samples from this patient's nose, their throat but also isolated from stool samples collected. Analysis of specimens taken from the gastrointestinal tract of 95 COVID-19 patients has identified the virus in the oesophagus, stomach, duodenum and rectum.<sup>25</sup> The virus also showed up in about half of the stool samples collected. The suggestion is that the gastrointestinal symptoms are caused by the virus invading the ACE2-containing cells that are found throughout the bowel. This together with the presence of the virus in the stool suggest the gastrointestinal tract as another possible route of infection and transmission.<sup>18</sup> It

appears that SARS-CoV-2 is detectable in the stool for several days after it has cleared from respiratory tract samples. So patients who have recovered from COVID-19 or are asymptomatic could be shedding virus into their stool without knowing it, potentially increasing the risk of transmission to others.

### Illness Severity

The largest cohort reported of >44,000 persons with COVID-19 from China showed that illness severity can range from mild to critical: Mild to moderate (mild symptoms up to mild pneumonia): 81%; Severe (dyspnea, hypoxia, or >50% lung involvement on imaging): 14%; Critical (respiratory failure, shock, or multiorgan system dysfunction): 5%<sup>26</sup>

### Reinfection

There are limited data about reinfection with SARS-CoV-2 after recovery from COVID-19.<sup>27,28</sup> While viral RNA shedding declines with resolution of symptoms, it may continue for days to weeks.<sup>29-31</sup> However, the detection of RNA during convalescence does not necessarily indicate the presence of viable infectious virus. Clinical infection has been correlated with the detection of IgM and IgG antibodies.<sup>32-35</sup> However, definitive data are lacking, and it remains uncertain whether individuals with antibodies are protected against reinfection with SARS-CoV-2, and if so, what concentration of antibodies is needed to confer protection.

### Diagnosis

To make a diagnosis, health care providers take medical history, history of contact with corona patients, including symptoms. Also necessary are detailed physical examination, blood tests, lab tests of sputum, a sample from a throat swab, or other respiratory specimens.

### Viral Testing

Diagnosis of COVID-19 requires detection of SARS-CoV-2 RNA by reverse transcription polymerase chain reaction (RT-PCR). Detection of SARS-CoV-2 viral RNA is better in

nasopharynx samples compared to throat samples.<sup>36</sup> Lower respiratory samples may have better yield than upper respiratory samples.<sup>36</sup> SARS-CoV-2 RNA has also been detected in stool and blood.<sup>37,38</sup> Detection of SARS-CoV-2 RNA in blood may be a marker of severe illness.<sup>39</sup> Viral RNA shedding may persist over longer periods among older persons and those who had severe illness requiring hospitalization (median range of viral shedding among hospitalized patients 12–20 days).<sup>40</sup> Infection with both SARS-CoV-2 and with other respiratory viruses has been reported, and detection of another respiratory pathogen does not rule out COVID-19.

### Laboratory Findings

Lymphopenia is the most common laboratory finding in COVID-19, and is found in as many as 83% of hospitalized patients.<sup>41,42</sup> Lymphopenia, neutrophilia, elevated serum alanine aminotransferase and aspartate aminotransferase levels, elevated lactate dehydrogenase, high CRP, and high ferritin levels may be associated with greater illness severity.<sup>43–45</sup> Elevated D-dimer and lymphopenia have been associated with mortality. Procalcitonin is typically normal on admission, but may increase among those admitted to an ICU.<sup>46</sup> Patients with critical illness had high plasma levels of inflammatory makers, suggesting potential immune dysregulation.<sup>47</sup>

### Radiographic Findings

Chest radiographs of patients with COVID-19 typically demonstrate bilateral air-space consolidation, though patients may have unremarkable chest radiographs early in the disease.<sup>48</sup> Chest CT images from patients with COVID-19 typically demonstrate bilateral, peripheral ground glass opacities.<sup>49,50</sup> Because this chest CT imaging pattern is non-specific and overlaps with other infections, the diagnostic value of chest CT imaging for COVID-19 may be low and dependent upon radiographic interpretation.<sup>51,52</sup> One study found that 56% of patients who presented within two days of diagnosis had a

normal CT.<sup>53</sup> Conversely, other studies have identified chest CT abnormalities in patients prior to the detection of SARS-CoV-2 RNA.<sup>54</sup> Given the variability in chest imaging findings, chest radiograph or CT alone is not recommended for the diagnosis of COVID-19.

### Treatment

At the moment there is no specific treatment for the disease caused by the coronavirus. Treatment is limited to easing the symptoms. Symptoms from a coronavirus infection cannot be treated with antibiotics because antibiotics are only effective against bacteria, not against viruses. There is no specific treatment for coronavirus. Treatment aims to relieve the symptoms. Most people will get better on their own. However, you can relieve your symptoms by taking over-the-counter medicines for pain, fever, and cough. Modalities of treatment are oral Favipravir, Injectable Remdesivir, Methylprednisolone or Dexamethasone, Enoxaparin, High flow oxygen, Ventilator etc. Using a room humidifier or taking a hot shower to help ease a sore throat and cough. Getting plenty of nutritious diet, drinking fluids and taking rest. No, antibiotics do not work against viruses. The 2019-NCOV is a virus and, therefore, antibiotics should not be used as a means of prevention or treatment.

### Prevention

Right now, there is no vaccine to prevent human coronavirus infections. But a person may be able to reduce risk of getting or spreading an infection by- Washing hands often with soap and water for at least 20 seconds, an alcohol-based hand sanitizer that contains at least 70% alcohol if soap and water are not available, avoiding touching the face, nose, or mouth with unwashed hands, use of face mask, avoiding close contact with people who are sick, mass gatherings, cleaning and disinfecting surfaces that are frequently touched, covering coughs and sneezes with a tissue followed by throwing away the tissue and then washing hands. Staying home when sick.

## Conclusion

GI manifestations are not uncommon in patients with COVID-19 infection and with passage of time they are more frequently being reported. In fact, a subgroup of these cases might present with pure GI symptoms. Fecal shedding of the virus and its detection not only establishes the GIT involvement by the virus but also highlights a potential source of spread—feco-oral transmission. More data are needed to come to concrete management decisions on difficult situations such as IBD with COVID infection. During this time of coronavirus pandemic, as more and more data and evidences keep pouring in, we, gastroenterologists, have to unlearn many older habits and learn a few new ones to protect ourselves and our patients. The principle should be “primum non nocere”—do no harm. Catching up with the vast knowledge that pours in everyday about this virus and management protocols, we have to tread our path more carefully.

GI symptoms are commonly encountered in hospitalized COVID-19 patients. GI symptoms were not associated with poorer outcomes such as increased mortality, longer hospital LOS, and increased mechanical intubation in COVID-19 patients. It appears that the GI symptoms could potentially be a bystander in patients with COVID-19. Further, more extensive studies are needed to evaluate the effects of GI symptoms on outcomes in COVID-19.

Avoiding close contact with people suffering from acute respiratory infections. Frequent hand-washing, especially after direct contact with ill people or their environment. Avoiding unprotected contact with farm or wild animals. People with symptoms of acute respiratory infection should practice cough etiquette. WHO does not recommend any specific health measures for travelers. In case of symptoms suggestive of respiratory illness either during or after travel, the travelers are encouraged to seek medical attention and share their travel history with their health care provider. Proper nutrition and hydration are vital. People who eat a well-balanced diet

tend to be healthier with stronger immune systems and lower risk of chronic illnesses and infectious diseases. So should eat a variety of fresh and unprocessed foods every day to get the vitamins, minerals, dietary fibre, protein and antioxidants, drink enough water.

## Acknowledgement

I am praying for those COVID-19 patients who sacrificed their lives during this pandemic. I am grateful to the respected COVID-19 fighters (doctors, health workers and other professionals), those who dedicated their lives in this war against invisible enemy and I pray for their departed souls.

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