Case Report

Persistent Vomiting as a Manifestation of Coronavirus Disease-2019

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Abstract

Coronavirus disease-2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus-2. It often manifest with respiratory symptoms such as cough, fever, and difficulty in breathing. In addition to pulmonary involvement, COVID-19 is also associated with several extrapulmonary manifestations. The extrapulmonary pathology of COVID-19 could be due to either extrapulmonary dissemination of the virus and its replication, as has been observed for other zoonotic coronaviruses or widespread immunopathological complications of the disease. We report a case of an 18-year-old female who presented with persistent vomiting as the only presentation of COVID-19. Clinical evaluation including a battery of investigation such as hematological, biochemical, imaging, and endoscopy did not reveal any abnormality. However, her nasopharyngeal and nasal swab samples tested positive for SARS-CoV-2 by polymerase chain reaction (PCR). We placed her on the approved COVID-19 regimen comprising lopinavir/ritonavir, zinc sulfate, hydroxychloroquine and azithromycin with augmentin, vitamin C, metoclopramide and intravenous fluid for one week. The vomiting subsided within 48-h of commencing the medications, and she became asymptomatic after 72-h. Repeat PCR after 12 days returned negative for SARS-CoV-2. This case report highlights the unusual clinical feature of COVID-19. It, therefore, underscores the need to thoroughly investigate symptomatic patients and also to optimize standard precaution as potentially infectious diseases such as COVID-19 may "masquerade" as a vague constitutional symptom(s).

Keywords: Coronavirus disease-2019, polymerase chain reaction, severe acute respiratory syndrome coronavirus – 2, vomiting

Introduction

Coronaviruses are pleomorphic, single-stranded RNA viruses that measure 100–160 nm in diameter. Coronaviruses that infect humans fall into two genera: *Alphacoronavirus* and *Betacoronavirus*.[1] Severe acute respiratory syndrome coronaviruses (SARS-CoV-1 and SARS-CoV-2) and Middle East respiratory syndrome coronavirus are *Betacoronaviruses*. The coronavirus disease-2019 (COVID-19) is a public health emergency of international concern and is responsible for the ongoing pandemic.[2,3] The COVID-19 is caused by a novel SARS-CoV-2 that emerged in December 2019 from Wuhan, China.[4] The clinical presentation is often that of respiratory infection with a symptom severity ranging from a mild common cold-like illness to severe viral pneumonia, leading to acute respiratory distress syndrome that is potentially fatal. Patients manifesting with a severe form of the disease constitute approximately 15% of the cases, often among those with advanced age ≥62 years or underlying medical conditions, such as renal impairment, diabetes mellitus, asthma, obesity, and cardiovascular or cerebrovascular diseases.[5] In addition to other symptomatology, approximately 10%–12% of patients with COVID-19 experience gastrointestinal (GI) symptoms, such as diarrhea (7.4%) and nausea or vomiting (4.6%). The GI manifestation of COVID-19 is a recognized feature and may portend a worse outcome for patients infected with SARS-CoV-2.[6] Several studies have provided insight into the ongoing COVID-19 pandemic with burgeoning information

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being reported in a short time span, with a focus on the GI tract due to COVID-19.[5,6] To our knowledge, no study reported persistent vomiting as the only manifestation of COVID-19. It is against this background that we reported this case to highlight the unusual presentation of this disease.

Case Report

An 18-year-old undergraduate student presented with a three-day history of persistent vomiting, which defied the antiemetic prescribed in the Medical Outpatient Department of Federal Medical Centre, Nguru. The vomiting was non-projectile and often postprandial, containing ingested food particles. Five days later, she started experiencing epigastric discomfort and postural dizziness and became lethargic.

Investigations done including full blood count and erythrocyte sedimentation rate, blood film for malaria parasite, urine microscopy, stool microscopy and parasitology, viral screening (HIV, hepatitis B and C), chest X-ray, abdominopelvic ultrasound scan, upper GI endoscopy, and abdominal, chest, and cranial computerized tomography were essentially normal. However, her nasopharyngeal and nasal swab sample tested positive for SARS-CoV-2 by polymerase chain reaction (PCR). The patient's investigation result and laboratory parameters for normal Nigerian adults used as reference values are as presented in Table 1.

We placed her on the approved and/or trial medications for COVID-19 comprising lopinavir/ritonavir, zinc sulfate, hydroxychloroquine and azithromycin with Augmentin, vitamin C, metoclopramide and intravenous fluid for one week. She improved within 48 h of commencing therapy and became asymptomatic after 72 h. Repeat PCR after 12 days returned negative for SARS-CoV-2.

Table 1: Laboratory and imaging profile of the patient

Investigations	Patient result	Reference range[7]
Hematology		
Hemoglobin concentration (g/dl)	11.3	11-13.5
White blood count	6.4×10^9/L	$4\text{-}11\times10^9$/L
Lymphocytes	27%	20-45%
Neutrophils	70%	45-75%
Monocytes	3%	0-4%
Eosinophils	-	0-2%
Platelets numbers	250×10^9/L	$150\text{-}400\times10^9$/L
Erythrocyte sedimentation rate (mm/h)	18	10-20
Malaria parasite (thin and thick film)	Not seen	-
Hepatitis B surface antigen	Nonreactive	-
Hepatitis C virus antibody	Nonreactive	-
HIV screening by determine and unigold	Nonreactive	-
Nasopharyngeal and nasal swab sample test for COVID 19	Positive for SARS CoV-2 by PCR	
Widal agglutination reaction	No significant titer of O, H Ag	Significant level O and H Ag>1:160
Urinary pregnancy test	Negative	-
Urine microscopy	Normal finding	
Urine analysis	Normal finding	
Stool microscopy and parasitology	Normal finding	
High vaginal swab	Pus cell +/HPF no growth	
Electrolytes (mmol/L)		
Sodium	138	135-145
Potassium	4.5	3-5
Chloride	98	95-110
Bicarbonate	26	20-30
Urea (mmol/L)	3.9	2.5-5.8
Creatinine	58 umol/L	44-132 mmol/L
Calcium (mmol/L)	2.4	2.2-2.7
Ionized calcium (mmol/L)	1.2	
Ing. phosphate (mmol/L)	0.7	0.6-1.3
Albumin (mmol/L)	43	35-50
Upper gastrointestinal endoscopy	The whole esophagus, stomach up to the duodenum, was visualized. The esophagus and gastric and duodenal mucosa appeared normal devoid of ulcer, tumor or narrowing	
Cranial, thoracic and abdominal CT	Normal finding	
Chest X-ray (PA) view	Normal finding	
Abdominopelvic ultrasound	Normal finding	

CT: Computerized tomography, PA: Posteroanterior, COVID: Coronavirus disease, PCR: Polymerase chain reaction, HPF: High power field

This case report highlights the unusual clinical feature of COVID-19. It, therefore, underscores the need to thoroughly investigate symptomatic patients and also to optimize standard precaution as potentially infectious diseases such as COVID-19 may "masquerade" as a vague constitutional symptom(s).

Discussion

The most common clinical presentation of COVID 19 involves the respiratory system. The spectrum of symptom severity ranges from features of mild common cold-like illness to severe viral pneumonia, which could lead to acute respiratory distress syndrome that is potentially associated with high mortality.[8] In addition to pulmonary involvement, SARS-CoV-2, the causative agent of COVID-19, is also associated with extrapulmonary manifestations.[9] The extrapulmonary pathology of COVID-19 could be due to either extrapulmonary dissemination of the virus and its replication, as has been observed for other zoonotic coronaviruses or widespread immunopathological complications of the disease. Several studies have reported COVID-19 presenting with GI, neurologic, hematologic, cardiovascular, renal, and otolaryngologic manifestations.[5,6,8,9]

The incidence of GI manifestation has ranged from 12% to 61% in patients with COVID-19.[10,11] In a meta-analysis of 29 studies, the pooled prevalence of individual symptoms reported anorexia (21%), nausea and/vomiting (7%), diarrhea (9%), and abdominal pain (3%).[12] In a study from the USA, a higher prevalence of GI symptoms was reported (anorexia, 34.8%; diarrhea, 33.7%; and nausea, 26.4%).[13] Furthermore, a study has shown that the presence of GI symptoms at presentation to be associated with a 70% increased risk of detection of SARS-CoV-2.[14] However, GI bleeding was rarely observed in the study, despite the presence of traditional risk factors, including prolonged mechanical ventilation, thrombocytopenia, or use of systemic anticoagulation.[14]

The pathophysiologic basis of GI involvement or damage in COVID-19 is multifactorial. The SARS-CoV-2–mediated direct damage to the GI cell is a possibility.[15-17] The Angiotensin-converting enzyme 2 (ACE-2), the receptor of SARS-CoV-2, is highly expressed in some segments of gastrointestinal tract. The SARS-COV-2 nucleocapsid protein is detectable in gastric, duodenal, rectal, and glandular enterocytes.[18] The microvascular small bowel injury occurs due to diffuse endothelial inflammation in the submucosal vessels. Evidence for the inflammation-mediated injury is provided by the presence of infiltrating plasma cells and lymphocytes. Inflammatory changes and interstitial edema are also seen in the lamina propria of the stomach, duodenum, and rectum of patients.[19] A study by Mak *et al*. has postulated that changes in the composition of intestinal flora by the SARS-CoV-2 may lead to GI symptoms and severe disease progression.[20] The gastrointestinal cells tropism for SARS-CoV-2 is further supported by the isolation of live virus from the stool samples of the patients with COVID-19. The continued shedding of infectious SARS-CoV-2 in the fecal matter suggests the need to investigate feces even after recovery as a potential source of viral transmission.[18]

Although there were no signs and symptoms attributable to neurological manifestation in our patient, Li *et al*. reported that some patients with COVID-19 showed neurological signs such as headache, nausea, and vomiting. However, it remains unclear if SARS-CoV-2 induces short-term manifestations of long term neurologic complications.[21]

The patient involved in this case report presented with persistent vomiting as the only manifestation of COVID-19, devoid of other symptomatology. There were no other abnormal findings on physical examination, except features of dehydration after persistent vomiting. Her laboratory parameters, including imaging and endoscopy findings, were essentially normal. The atypical presentation of COVID-19 reported in this study seeks to provide insights into the less common manifestations of COVID-19. This study underscores the desirability of considering COVID-19 as a differential diagnosis in patients even in the absence of a respiratory system. In a resource-limited setting, patients presenting with vague symptoms should be prioritized for testing.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

References

1. Woo PC, Lau SK, Huang Y, Yuen KY. Coronavirus diversity, phylogeny and interspecies jumping. Exp Biol Med (Maywood) 2009;234:1117-27.
2. Ren LL, Wang YM, Wu ZQ, Xiang ZC, Guo L, Xu T, *et al*. Identification of a novel coronavirus causing severe pneumonia in human: A descriptive study. Chin Med J (Engl) 2020;133:1015-24.
3. Gorbalenya AE, Baker SC, Baric RS, de Groot RJ, Drosten C, Gulyaeva AA, *et al*. Severe acute respiratory syndrome-related coronavirus: The species and its viruses – A statement of the Coronavirus Study Group. Nat Microbiol 2020;5 : 536–544. https://doi.org/10.1038/s41564-020-0695-z.
4. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, *et al*. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet 2020;395:497-506.
5. Liu K, Fang YY, Deng Y, Liu W, Wang MF, Ma JP, *et al*. Clinical characteristics of novel coronavirus cases in tertiary hospitals in Hubei Province. Chin Med J (Engl) 2020;133:1025-31.
6. Parasa S, Desai M, Thoguluva Chandrasekar V, Patel HK, Kennedy KF, Roesch T, *et al*. Prevalence of gastrointestinal symptoms and fecal viral shedding in patients with coronavirus disease 2019: A systematic review and meta-analysis. JAMA Netw Open 2020;3:e2011335.
7. Miri-Dashe T, Osawe S, Tokdung M, Daniel N, Choji RP, Mamman I,

et al. Comprehensive reference ranges for hematology and clinical chemistry laboratory parameters derived from normal Nigerian adults. PLoS One 2014;9:e93919.
8. Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, *et al*. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. JAMA 2020;323:1061-9.
9. Gupta A, Madhavan M, Sehgal K, Nair N, Mahajan S, Sehrawat TS, *et al*. Extra-pulmonary manifestations of COVID-19. Nat Med 2020;26:1-6.
10. Pan L, Mu M, Yang P, Sun Y, Wang R, Yan J, *et al*. Clinical characteristics of COVID-19 patients with digestive symptoms in Hubei, China: A descriptive, cross-sectional, multicenter study. Am J Gastroenterol 2020;115:766-73.
11. Cao B, Wang Y, Wen D, Liu W, Wang J, Fan G, *et al*. A trial of lopinavir-ritonavir in adults hospitalized with severe COVID-19. N Engl J Med 2020;382:1787-99.
12. Mao R, Qiu Y, He JS, Tan JY, Li XH, Liang J, *et al*. Manifestations and prognosis of gastrointestinal and liver involvement in patients with COVID-19: A systematic review and meta-analysis. Lancet Gastroenterol Hepatol 2020;5:667-78.
13. Redd WD, Zhou JC, Hathorn KE, McCarty TR, Bazarbashi AN, Thompson CC, *et al.* Prevalence and characteristics of gastrointestinal symptoms in patients with severe acute respiratory syndrome coronavirus 2 infection in the United States: A Multicenter Cohort Study. Gastroenterology 2020;159:765-7.e2.
14. Nobel YR, Phipps M, Zucker J, Lebwohl B, Wang TC, Sobieszczyk ME, *et al*. Gastrointestinal symptoms and coronavirus disease 2019: A case-control study from the United States. Gastroenterology 2020;159:373-500.
15. Wölfel R, Corman VM, Guggemos W, Seilmaier M, Zange S, Müller MA, *et al*. Virological assessment of hospitalized patients with COVID-2019. Nature 2020;581:465-9.
16. Zhang H, Kang Z, Gong H, Xu D, Wang J, Li Z, *et al*. Digestive system is a potential route of COVID-19: An analysis of single-cell co-expression pattern of key proteins in viral entry process. Gut 2020;69:1010-8.
17. Lamers MM, Beumer J, van der Vaart J, Knoops K, Puschhof J, Breugem TI, *et al*. SARS-CoV-2 productively infects human gut enterocytes. Science 2020;369:50-4.
18. Xiao F, Tang M, Zheng X, Liu Y, Li X, Shan H. Evidence for gastrointestinal infection of SARS-CoV-2. Gastroenterology 2020;158:1831-3.e3.
19. Varga Z, Flammer AJ, Steiger P, Haberecker M, Andermatt R, Zinkernagel AS, *et al*. Endothelial cell infection and endotheliitis in COVID-19. Lancet 2020;395:1417-8.
20. Mak JW, Chan FK, Ng SC. Probiotics and COVID-19: One size does not fit all. Lancet Gastroenterol Hepatol 2020;5:644-5.
21. Li YC, Bai WZ, Hashikawa T. The neuroinvasive potential of SARS-CoV2 may play a role in the respiratory failure of COVID-19 patients. J Med Virol 2020;92:552-5.