



# HSV-2 Meningitis Presenting with Diarrhea: A Diagnostic Dilemma During the COVID-19 Pandemic

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## Abstract

We present the case of a 29-year-old female with a past medical history of type 1 diabetes who presented with diarrhea, emesis, fever, and headache in April 2020. Given her symptoms, and the height of the SARS-CoV-2 pandemic, she was initially suspected to have COVID-19 (corona virus disease 2019). Real-time reverse transcriptase-polymerase chain reaction (rRT-PCR) testing for SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) was sent and returned negative the following morning. The treatment team then suspected viral gastroenteritis and was inclined to discharge the patient home with recommendations for supportive care and quarantine. However, a lumbar puncture was performed to rule out meningitis. Cerebrospinal fluid testing revealed lymphocytic pleocytosis and FilmArray Meningitis/Encephalitis panel returned positive for Herpes Simplex Virus Type-2. The patient reported a remote history of genital lesions 7 years prior with no recurrence since. In light of the current pandemic, we describe this case so as to remind our colleagues to not forget that other known infections, such as meningitis, continue to exist and, due to overlapping symptomology, may be easily missed.

**Keywords:** Meningitis, HSV2; COVID-19 Pandemic

## Introduction

COVID-19 is caused by SARS-CoV-2 and was declared a global pandemic by the World Health Organization in March 2020 [1]. While originally thought to be a respiratory illness, the understanding of this novel disease has evolved rapidly, with gastrointestinal symptoms now considered common manifestations. In a case-control study from Columbia University, patients with gastrointestinal symptoms (including diarrhea and vomiting) were more likely to test positive for COVID-19 (61% versus 39%,  $p = 0.04$ ). Furthermore, the presence of these symptoms increased the risk of a positive test by 70% [2]. There are increasing reports that COVID-19 can also present with neurological symptoms, including headache, which is one of the most common, and encephalopathy [3]. Thus, given the heterogeneity of symptoms at presentation, COVID-19 can clinically overlap with many other conditions. We present the case of a patient initially suspected to be suffering from COVID-19, which delayed diagnosis of and treatment of her underlying viral meningitis.

## Case Presentation

We report the case of a 29-year-old, immunocompetent, Caucasian female with a history of type 1 diabetes mellitus who presented to the emergency department (ED) in April 2020. She reported several episodes of non-bloody diarrhea the day prior. The morning of hospital presentation she woke up with headache, fatigue, and experienced one episode of emesis. She also reported chills, diaphoresis, and fever, with a maximum temperature of 101°F. The patient denied history of cough, dyspnea, or chest tightness. She reported no nuchal rigidity, confusion, or photophobia. She had no recent sick contacts or travel history. The primary concern was COVID-19 (corona virus disease 2019).

On physical exam she was alert and oriented, afebrile, and hemodynamically stable. Her lungs were clear to auscultation. Laboratory testing revealed serum glucose of 302 mg/dL. She also had mild leukocytosis (10.6/L). There

was no evidence of thrombocytopenia and liver enzymes were not elevated. Chest x-ray was within normal limits and revealed no signs of consolidation, pneumothorax, or pleural effusion. Diagnostic testing for SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) via real-time reverse transcriptase-polymerase chain reaction (rRT-PCR) was sent. Intravenous fluids were started and the patient was given ketorolac for her headache. She was held overnight for consultation with the internal medicine team, who evaluated her early the following morning.

At this time she remained afebrile but had significant diaphoresis, with her hospital gown soaked in perspiration. Her headache persisted. On full forward neck flexion she reported mild tenderness but no frank nuchal rigidity. There were no focal neurological deficits. Testing for SARS-CoV-2 returned negative. A possible viral gastroenteritis was then considered on the differential diagnosis, with thoughts to discharge the patient home for quarantine. However, given the history of headache and fever amidst her other symptoms, the attending physician from internal medicine performed a lumbar puncture to rule out meningitis.

Cerebrospinal fluid (CSF) analysis yielded lymphocytic pleocytosis (69%) and elevated protein (110 mg/dL). CSF glucose was within normal limits. Blood and CSF Gram staining and cultures were sterile. CT scan of the brain was unremarkable. Upon further questioning, the patient reported one episode of self-limiting genital herpes 7 years prior, with no recurrence since. Results of FilmArray Meningitis/Encephalitis panel confirmed the diagnosis of Herpes Simplex Virus Type-2 (HSV-2) meningitis. Infectious disease was consulted and the patient was managed with intravenous acyclovir, later switched to oral valacyclovir, as well as hydromorphone and hydrocodone/acetaminophen for her headache. She continued to remain afebrile and without neurological deficits and was discharged in stable condition on the fourth day of admission.

## Discussion

Meningitis can be from bacterial and viral causes, the former of which is considered a medical emergency. The classic presentation includes fever, headache, altered mental status, and nuchal rigidity, and the presence of 2 or more of these warrants investigation for bacterial meningitis [4]. Furthermore, there are reports of both bacterial and viral meningitis presenting with diarrhea and other gastrointestinal complaints [5,6]. In the setting of the current pandemic, this combination of symptoms, as in our patient, is very similar to that of COVID-19. While our patient had aseptic meningitis, it is difficult to distinguish bacterial and viral causes on the basis of symptoms alone [7]. Thus, a timely lumbar puncture is necessary to rule out the more critical bacterial meningitis.

## Conclusion

The present case emphasizes the need to adopt a high degree of clinical suspicion when managing patients with complaints of fever, headache, and diarrhea during the current pandemic. We implore our medical colleagues to continue to think outside the box during this pandemic, so as to avoid missing other critical diagnoses.

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## References

1. Cucinotta D, Vanelli M (2020) WHO Declares COVID-19 a Pandemic. *Acta Biomed* 91(1): 157-60.
2. Nobel YR, Phipps M, Zucker J, Lebwhoi B, Wang TC., et al (2020) Gastrointestinal Symptoms and COVID-19: Case-Control Study from the United States [published online ahead of print, 2020 Apr 12]. *Gastroenterology* S0016-5085(20)30490-X.
3. Mao L, Jin H, Wang M, Hu Y, Chen S., et al (2020) Neurologic Manifestations of Hospitalized Patients With Coronavirus Disease 2019 in Wuhan, China [published online ahead of print, 2020 Apr 10]. *JAMA Neurol* e201127.
4. Mount HR, Boyle SD (2017) Aseptic and Bacterial Meningitis: Evaluation, Treatment, and Prevention. *Am Fam Physician* 96(5): 314-22.
5. Kenane N, Bordes J, Sene E, Kone M, Seck M., et al (2010) [Watery diarrhea with fever: consider the possibility of pneumococcal meningitis]. *Med Trop (Mars)* 70(1):102.
6. Desmond RA, Accortt NA, Talley L, Villano SA, Soong SJ., et al (2006) Enteroviral meningitis: natural history and outcome of pleconaril therapy. *Antimicrob Agents Chemother.* 50(7): 2409-14.
7. Griffiths MJ, McGill F, Solomon T (2018) Management of acute meningitis. *Clin Med (Lond)* 18(2):164-9.