

# Rapid gastric emptying as cause of gastrointestinal symptoms in dysautonomia in a post-covid patient

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## Abstract

Covid 19 infection and its subsequent post-viral sequelae (long-Covid) has been associated with a range of clinical symptoms, including the more recently recognized autonomic nervous system dysfunction/orthostatic intolerance. Included in the autonomic nervous system dysfunction spectrum includes non-cardiovascular symptoms specifically gastrointestinal symptoms. We present a case of a long-Covid patient with debilitating symptoms consistent with autonomic dysfunction and gastrointestinal symptoms. We highlight the difficulty of diagnosis and management of this patient and the importance of awareness of presentation to not delay care in this complicated patient population.

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Abstract: Covid 19 infection and its subsequent post-viral sequelae (long-Covid) has been associated with a range of clinical symptoms, including the more recently recognized autonomic nervous system dysfunction/orthostatic intolerance. Included in the autonomic nervous system dysfunction spectrum includes non-cardiovascular symptoms specifically gastrointestinal symptoms. We present a case of a long-Covid patient with debilitating symptoms consistent with autonomic dysfunction and gastrointestinal symptoms. We highlight the difficulty of diagnosis and management of this patient and the importance of awareness of presentation to not delay care in this complicated patient population.

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Introduction: The SARS-CoV-2 virus, more commonly known as Coronavirus 2019 (COVID-19), and its subsequent post-viral sequelae (long-Covid) is associated with a range of clinical symptoms, specifically autonomic nervous system dysfunction/orthostatic intolerance. These syndromes include orthostatic hypotension (OH), vasovagal syncope (VVS) and postural orthostatic tachycardia syndrome (POTS) <sup>1,2</sup>. There is ongoing investigation of the pathophysiology, but it is thought to be due to virus or immune-mediated disruption of the autonomic nervous system.<sup>1</sup> A case series of 20 patients revealed that new-onset POTS can occur after COVID-19 in previously healthy patients who experience persistent neurological and cardiovascular symptoms after the resolution of the acute infection<sup>3</sup>.

POTS is characterized by lightheadedness, dizziness, blurred or fading vision, generalized weakness, fatigue, palpitations, mental clouding, anxiety, nausea, dyspnea, and headache<sup>4</sup>. Additionally, gastrointestinal symptoms such as rapid gastric emptying are also common in POTS patients<sup>4</sup>.

According to researchers, nausea and abdominal pain are the most frequent non-cardiovascular symptoms among POTS patients, with a prevalence of 69% in six studies involving 352 patients<sup>5</sup>. Mehr et al. reported evidence of abnormal gastric motility, with rapid gastric emptying occurring in 43% of cases. Another study examining 163 POTS patients with GI symptoms revealed that 78 (48%) had rapid gastric emptying<sup>6</sup>. However, to our knowledge, there are no studies to date that found an association between rapid gastric emptying and dysautonomia in a post-covid patient. In this case report, we present the clinical findings, diagnostic results, treatments, differential diagnoses, and recommendations for a post-COVID patient with dysautonomia and rapid gastric emptying with the aim to highlight the diagnostic difficulties and importance of early awareness.

**Case description:** A 52 year old male with a past medical history of asthma presented to the Long-Covid clinic in April 2022. He tested positive for Covid-19 in January 2022. He received the J&J Booster in May 2021. He presented to his primary care provider (PCP) just after testing positive with shortness of breath, low grade fever, body aches, fatigue, chest tightness and vomiting. He was subsequently sent to the emergency department (ED) for escalation of care. ED work-up revealed a normal chest x-ray, EKG, BMP and CBC. He was treated with IV fluids, Tylenol, Zofran and discharged home with prednisone 50mg daily x 5 days and an albuterol inhaler.

He continued to see his PCP for lingering symptoms which included diarrhea, cough and fatigue. Treatments included Z-pak, Zofran, and Imodium. He was then referred to the Long-Covid clinic. In this clinic he was seen by a pulmonologist and a physiatrist. Initial labs were significant for ESR: 36 and Vitamin D: 9.0. He had a negative ANA and normal TSH. His complaints consisted of fatigue, tachycardia, muscle and joint pain, diarrhea, insomnia and brain fog. He completed a sleep study which showed sleep apnea. He was referred to physical therapy and speech therapy. Autonomic dysfunction/POTs remained on the differential but the focus at that time was on the fatigue and brain fog which were the most debilitating symptoms.

For his gastrointestinal (GI) symptoms, he was referred to gastroenterology who completed a colonoscopy and EGD in November 2022 which showed sigmoid diverticulosis and erosive esophagitis with a nonobstructive Schatzki ring, gastritis, respectively. He was started on pantoprazole 40mg daily for the latter. He continued to have significant tachycardia and fatigue and was unable to be upright for prolonged periods of time. More conservative measures for POTS/dysautonomia including increased salt and water intake were prescribed, but given his continued diarrhea and abdominal symptoms it was difficult for him to be compliant with the regimen. He was then started on Mestinon 30mg BID which caused severe constipation and abdominal pain, despite improvements in tachycardia. He was then tapered off the Mestinon which relieved those symptoms. At this time a gastric emptying study was ordered, which revealed accelerated gastric emptying. He was started on Rifaximin 550mg TID for 2 weeks and simethicone daily after discussion with gastroenterology with no relief in symptoms. HbA1C was ordered and was normal. He was then started on hyoscyamine 0.125mg every 6 hours for relief in symptoms and 3 sessions of IV fluids for dehydration and POTs. He reported some relief in symptoms with the above, so this plan was continued with an increase in hyoscyamine dose to 0.25mg every 6 hours and he is awaiting follow-up.

**Discussion:** This case highlights the need for multi-specialty care in the long-covid population and the difficulties of managing these patients. For the general gastroenterologist, management of rapid gastric emptying in a dysautonomia patient is relatively unknown. Further, for the general physiatrist, severe GI symptoms in the long covid population was seen less frequently and it wasn't until reviewing literature that the connection between rapid gastric emptying and dysautonomia was made. Also, because this patient's symptoms were multiple and most were debilitating, it presented a clinical challenge for what treatment regimen to begin with. The patient's symptoms also fluctuated throughout his time in the clinic, which is also very common in the dysautonomia population.

Conclusion: Awareness of all possible symptoms in the dysautonomia population are key to decreasing the length of time of patients' suffering. In this case, rapid gastric emptying from autonomic dysfunction secondary to long-covid is the likely etiology of his diarrhea, but it took approximately one year in the long-covid clinic to recognize this. While long-covid symptoms and management remain challenging for most medical providers, awareness of etiologies of each symptom, will aid in patient recovery and improve quality of life.

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