Fever, cough and shortness of breath are the classic symptoms of COVID-19, but there may be gastrointestinal symptoms, such as nausea and diarrhea, that are getting missed, according to a new Stanford Medicine study.

Researchers found that, in addition to upper respiratory symptoms, a significant number of those sick with the new virus also suffered from loss of appetite, nausea, vomiting and diarrhea.

The study, one of the earliest on U.S. patients with the coronavirus, was published online April 10 in *Gastroenterology*. Gastroenterology fellows George Cholankeril, MD, and Alexander Podboy, MD, share lead authorship. Aijaz Ahmed, MD, professor of gastroenterology and hepatology, is the senior author.

"COVID-19 is probably not just respiratory symptoms like a cough," Podboy said. "A third of the patients we studied had gastrointestinal symptoms. It's possible we may be missing a significant portion of patients sick with the coronavirus due to our current testing strategies focusing on respiratory symptoms alone."

**Unique situation**

As the coronavirus pandemic hit the San Francisco Bay Area in early March, hospitals began canceling elective surgeries and postponing nonemergency patient visits to make room for a surge of coronavirus patients. With their clinics closed and other projects on hold, a group of gastroenterology fellows had time to work together on a project, Podboy said.

"George recognized early on that since Stanford was among the first hospitals to get COVID-19 patients in the U.S., that any type of early experience would be important," he said. "We were in a unique position to look into this subject of gastrointestinal symptoms among coronavirus patients at Stanford."

The researchers were aware of a growing body of research out of China and Singapore that showed a prevalence of GI symptoms in COVID-19 patients, but could find no data on the topic from patients in the United States. They decided to conduct their own study by examining the charts of the earliest group of patients treated for the virus at Stanford Health Care.

**Study results**

Researchers analyzed data collected from 116 patients who tested positive for the coronavirus at Stanford Health Care from March 4-24. The majority were treated and released from a hospital emergency room or a clinic. A total of 33 were hospitalized, eight of those in an intensive care unit.

The median age of the patients was 50, and 53% of them were men. Only one death was reported within the group.

Gastrointestinal symptoms were reported by 31.9% of the patients. The majority of that group described the symptoms as mild. Twenty-two percent said they experienced loss of appetite, 22% had nausea and vomiting, and 12% had diarrhea, the study said.
"We also noticed that 40% of patients had elevated levels of an abnormal liver enzyme, and that those with high levels required more hospitalization," Cholankeril said.

**Testing recommended**

The researchers suggest that while this data is early and from only a single institution, the results do raise the possibility that people exposed to the coronavirus who are experiencing gastrointestinal symptoms—not just those with respiratory symptoms—should also be tested.

"In our current cohort of patients, all patients had respiratory symptoms prior to the development of gastrointestinal symptoms," Podboy said. "No patients had gastrointestinal symptoms prior to the development of respiratory symptoms or as their only manifestation of COVID-19."

He added, "However, that may be a product of who we were testing. Currently, testing is only offered for patients that meet specific criteria—criteria that often require the presence of pulmonary symptoms."

The researchers plan to study the role of GI symptoms in COVID-19 and their implication on disease severity and hospitalization outcomes, Cholankeril said. They also plan to continue working as a team.

"We had six fellows working together and we were able to go through these charts pretty quickly," Cholankeril said. "It was a terrific collaboration between colleagues to be able to join forces to study this new disease. We think that by looking at patients here at Stanford, it can help improve our understanding of this emerging disease."


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