

Original research article

## **A Cross-Sectional Study Among Patients Presenting with Pain Abdomen to Surgical Emergency and its Correlation to Covid 19 Infection at a Tertiary Care Teaching Hospital**

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### **Abstract**

**Background:** As the countries all around the globe grapple with the COVID-19 pandemic. Varied presentation of the disease is posing a challenge to every medical department. In the emergency room, most encountered complaints other than dry cough, breathlessness, and malaise is generalized abdominal pain. Stabbing headache, abdominal pain, diarrhea, and vomiting are a few extrapulmonary symptoms that are usually found. Abdominal pain is commonly ignored in comparison to respiratory symptoms. Therefore, in this study, we focus on abdominal symptoms and study these presentations in relation to Covid-19.

**Methods:** Convenient sampling method will be used to collect data. All the patients coming to the surgical emergency department with pain abdomen will be subjected to an RTPCR test for the diagnosis of COVID 19. Patients with positive test results will be included in the study after obtaining informed consent. The patients will be clinically examined, and relevant investigations X-ray/USG/CT will be carried out to arrive at a diagnosis and cause of pain abdomen.

**Results:** The most important clinical signs and symptoms of the patients include pain abdomen in 100% of cases followed by nausea and vomiting in 38.46% of cases, diarrhea in 30.77% of cases. Bloating/belching and backache in 19.23% cases, abdominal distension in 11.53% cases, and loss of appetite in 7.69% cases. All the n=26(100%) cases in this study were subjected to RTPCR for COVID-19 on admission to the surgical emergency ward and 100% of cases were found to be negative for COVID-19.

**Conclusion:** SARS-CoV-2 virus is known to produce one or more severe GI symptoms which may be treated as a surgical emergency. The cases of acute abdominal emergencies included in the study were found to be negative for COVID-19 by RTPCR. The present study did not find any correlation of COVID-19 with the pain abdomen and surgical emergency.

**Keywords:** SARS-CoV-2 virus, COVID-19, pain abdomen, surgical emergency

## Introduction

The coronavirus disease (COVID-19) pandemic is caused by coronavirus virus 2 severe acute respiratory syndrome (SARS-CoV-2). Fever, cough, and myalgias (fatigue) were common clinical characteristics recorded in early confirmed infections.<sup>[1, 2]</sup> GI symptoms such as diarrhea, nausea, vomiting, abdominal discomfort, and lack of appetite have become more widely recognized as testing capacity and case numbers have expanded internationally.<sup>[3-5]</sup> The pathophysiology of SARS-CoV-2 is becoming more understood, and the virus' capacity to attach to the ACE-2 receptor, which enables entrance into epithelial cells, is critical for significant illness consequences. This can cause a severe host hyperimmune response in the lungs, leading to a life-threatening cytokine storm and the systemic inflammatory response syndrome.<sup>[6, 7]</sup> The process is similar in the gastrointestinal system, and evidence of SARS-CoV-2 infection has emerged from hospitalized individuals who tested positive for the virus in their feces. The ACE 2 receptor was found in the cytoplasm of GI epithelial cells, and the viral nucleocapsid protein was found in the cytoplasm of gastric, duodenal, and rectal glandular epithelial cells, but not in the esophageal epithelial cells.<sup>[8]</sup> Age, inflammation, and illness location are all important drivers of ACE-2 disease expression in inflammatory bowel disease (IBD). Normal individuals had greater ACE-2 expression in the terminal ileum than in the colon, whereas IBD patients' ACE-2 expression was also higher in the terminal ileum than in the colon.<sup>[9]</sup> In one large UK series of more than 20,000 hospitalized patients, the most common symptoms of COVID-19 infection were fever (71.6%), cough (68.9%), and shortness of breath (71.2%), which corresponded to the case definition.<sup>[10]</sup> At the time of admission, just 4.5 percent of patients had no symptoms. However, there were three other symptom clusters identified, including myalgia, joint pain, headache, and fatigue, as well as abdominal discomfort, nausea, vomiting, and diarrhea. Only 4% of patients complained solely of gastrointestinal symptoms, which were recorded by 29 percent of all patients, mostly in combination with respiratory symptoms. Han et al.,<sup>[11]</sup> from Wuhan have described a subgroup of 206 cases of Covid-19 presenting to hospital with 23% cases with only digestive symptoms of diarrhea, nausea, and vomiting and 33% with and 23% without respiratory symptoms and 43% with solely respiratory symptoms. The number of patients diagnosed with or suspected of having COVID-19 infection entering our emergency and inpatient services has significantly increased as the disease's incidence rate has increased in our country. In areas where the epidemic has spread, it is consequently suggested that elective procedures be postponed if possible.<sup>[12, 13]</sup> However, with emergency surgeries, this is not possible, and it has become vital to carry out such procedures with the utmost prudence. Despite the wide recognition of abdominal manifestations to our knowledge, we have not come across a study that has tried to evaluate the association of COVID-19 with pain abdomen. Therefore, we in the current study tried to evaluate the correlation of pain abdomen with COVID-19 infections.

## Material and Methods

This cross-sectional study was conducted in the Department of General Surgery, ESIC Medical College Hyderabad. Institutional Ethical approval was obtained for the study after duly following the prescribed format for approval. Written consent was obtained from all the participants of the study. The study was done from the period of May 2021 to August 2021. This study did not include elective or semi-elective operations. All the cases presenting with pain abdomen were included in the study. Non-abdominal surgical patients were excluded from the study. The patients were subject to RTPCR test for COVID-19 after arrival at the Hospital. Patients' demographic information, comorbidities, surgical indications, preoperative patient assessment environment, preoperative imaging methods, infection parameters, surgical procedures, anesthetic procedures, postoperative intensive care requirement, length of hospital stay, and postoperative morbidity and mortality rates were all examined. The initial

examination of the patient was done using personal protective equipment with gloves and masks N-95 or filtering facepiece (FFP) masks, protective goggles, and protective gowns started to be used as routine. The patient RTPCR report was obtained, and data was entered. Those requiring non-surgical management were treated appropriately with required medications. The patients who were scheduled for surgery were moved to the operating room wearing a mask and without much delay in the preoperative room to reduce the exposure of the patients to many people. Anesthetic procedures were carried out with the team wearing an N-95 protective mask with a surgical mask over it, a surgical box gown, and protective goggles. Recovery and wakening occurred in the operating room patients requiring intensive care were transferred to the intensive care. Statistical analysis was done by uploading the data on MS Excel spreadsheet and analyzed with SPSS version 21 on windows format and for continuous variables mean and standard deviations were used for categorical variables number and percentages were measured and to determine the significance between two groups Chi-square test/Fisher's extraction test was used.

## Results

In the duration of the study, a total of n=108 cases were admitted to the Department of General Surgery. Out of these n=26(24.07%) were cases with pain abdomen. Out of the n=26 cases, n=16(61.54%) were males and n=10(38.46%) cases were females. The male to female ratio was 1.6:1. The age range of the cases of the present study was from 19 to 63 years and the mean age was  $38.56 \pm 6.5$  years. A critical analysis of table 1 reveals out of all the age groups affected the most common age group of involvement with abdominal pain was 41 – 50 years with 30.77% of the cases followed by age group 21 – 30 years with 23.07% of cases. The age group 31 – 40 years contributed 19.23% of cases of abdominal pain.

**Table 1: Demographic profile of the cases included in the study**

Age group	Male	Female	Total (%)
18 – 20	1	0	1 (3.8)
21 – 30	4	2	6 (23.07)
31 – 40	3	2	5 (19.23)
41 – 50	5	3	8 (30.77)
51 – 60	2	2	4 (15.38)
> 61	1	1	2 (7.7)
Total	16	10	26(100%)

The most important clinical signs and symptoms of the patients include pain abdomen in 100% of cases followed by nausea and vomiting in 38.46% of cases, diarrhea in 30.77% of cases. Bloating/belching and backache in 19.23% cases, abdominal distension in 11.53% cases, and loss of appetite in 7.69% cases depicted in table 2.

**Table 2: Clinical signs and symptoms of the patients in the study**

Signs/symptoms	Frequency	Percentage
Pain abdomen	26	100.0
Diarrhea	8	30.77
Nausea/ vomiting	10	38.46
Abdominal distension	3	11.53
Bloating/belching	5	19.23
Loss of appetite	2	07.69
Backache	5	19.23

Most of the CT scans were performed with IV contrast and gastric and bowel wall abnormalities were found in 38.46% of cases. Acute interstitial pancreatitis was found in 19.23% of cases. There were incidental findings of fatty liver disease, cirrhosis, and splenomegaly were found. The remaining CT studies did not reveal any abnormality. Based on the image studies and USG diagnosis of patients were made given in table 3.

**Table 3: Diagnosis of patients with abdominal pain**

Diagnosis	Frequency	Percentage
Pancreatitis	5	19.23
Renal colic	5	19.23
Renal calculi	5	19.23
Acid peptic disease	5	19.23
Gastroenteritis	3	11.53
Appendicitis	2	07.69
Urinary tract infection	1	03.85

All the n=26(100%) cases in this study were subjected to RTPCR for COVID-19 on admission to the surgical emergency ward and 100% of cases were found to be negative for COVID-19. The test was repeated in cases who underwent the surgical operation and at the time of discharge and all the cases were found to be negative for COVID-19.

## Discussion

Early reports from China, all based on retrospective data, reported the prevalence of GI symptoms in COVID-19 cases between 11.4 and 50%.<sup>[14, 15]</sup> Patients with severe COVID-19 were more likely to have gastrointestinal symptoms, especially abdominal pain which often requires emergency consultation.<sup>[16, 17]</sup> Based on these observations we in the current study tried to find a correlation of COVID-19 and GI symptoms in surgical emergency presentations. In our study, we did not find any case with COVID-19 positivity with GI emergency symptoms. Some reports have shown that GI symptoms as initial presenting symptoms in 3 – 10% of the adult patients and more commonly in children. Anorexia is one of the commonly reported symptoms of COVID-19 although it is quite non-specific. In individuals with modest clinical illness, neurosensory consequences such as dysgeusia and anosmia have been documented.<sup>[18]</sup> The basic mechanism postulated to be related to the virus's ability to use ACE-2 receptors located on the intestinal cells, cholangiocytes, and hepatocytes. Viral contact with the squamous and columnar epithelium, mediated by ACE-2 receptor interference, is expected to cause direct functional harm to the GI tract. However, when compared to the intestine, the expression of ACE 2 receptors is much reduced or missing in the esophagus and stomach.<sup>[19, 20]</sup> The serine protease complex TMPRSS2 has lower expression in the oesophageal and gastric mucosa than in the intestinal mucosa.<sup>[21]</sup> Although direct viral damage is assumed to occur largely in the small and large intestine, this does not rule out the possibility of an upper GI tract origin for abdominal symptoms. Therefore, a significant proportion of COVID-19 patients can be present with initial GI symptoms. Elevation of liver transaminases has also been reported in a substantial proportion of patients. In our study 19.23% of cases of abdominal emergencies were due to acute pancreatitis, However, none of the cases were found to be COVID-19 positive by RTPCR test. Studies have shown that acute pancreatitis is a commonly reported abdominal emergency primarily induced by the SARS-CoV-2 virus.<sup>[22, 23]</sup> In our study acid peptic disease was the cause of emergency in 19.23% of COVID-19 cases. GI bleeding is one of the most frequent reasons for emergency consultation. Although, GI bleeding in patients with COVID-19 is not as frequent as other GI symptoms. Although a large proportion of

COVID-19 patients may remain asymptomatic all approaches to the patients were done under the assumption that they are covid positive from the earliest days. Because the virus is mainly transmitted by droplets, the virus may remain on the surfaces for hours to days with a potential source of transmission by contact.<sup>[24]</sup> This constitutes a risk for healthcare professionals. Since all the elective surgeries were postponed because of the extended duration of the pandemic there are an increasing number of cases with abdominal emergencies presenting to the hospitals. The present study was limited to singer center cases, lack of randomization and a small number of cases studied.

### Conclusion

Within the limitations of the present study, it can be concluded that the SARS-CoV-2 virus is known to produce one or more severe GI symptoms which may be treated as a surgical emergency. The cases of acute abdominal emergencies included in the study were found to be negative for COVID-19 by RTPCR. The present study did not find any correlation of COVID-19 with the pain abdomen and surgical emergency.

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