

## Covoid -19 Can Shows Itself as an Acute Appendicitis in Adults: A Case Series

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### Abstract:

Patients with COVID-19 present with a wide spectrum of respiratory symptoms, ranging from mild flu-like symptoms to severe and potentially life-threatening pneumonia (2). Furthermore, some patients report gastrointestinal symptoms, such as nausea, vomiting, diarrhea and abdominal pain in addition to the aforementioned respiratory symptoms or, in rare cases, as a distinct presentation of illness. Even though abdominal pain syndrome suggests acute appendicitis, it is crucial to consider SARS-CoV-2 infection as a potential diagnosis during this pandemic era.

In this study we explain 3 cases with Alvarado's scale highly suggestive for an acute appendicitis and after surgery their PCR tests for Covoid19 was positive. In conclusion, since SARS-CoV-2 infection and acute appendicitis share symptoms including fever, anorexia, nausea, vomiting and even severe abdominal pain, the clinical diagnosis for the surgical abdomen in patients with COVID-19 is of limited effectiveness.

**Key words:** Sars-Cov-2, Pcr, Acute Appendicitis, Surgery.

### Background:

With 430 million confirmed cases of infection by the end of February, 2022, the novel coronavirus, which causes coronavirus disease 2019 (COVID-19), has negatively affected patients and healthcare systems worldwide (1). Patients with COVID-19 present with a wide spectrum of respiratory symptoms, ranging from mild flu-like symptoms to severe and potentially life-threatening pneumonia (2). Furthermore, some patients report gastrointestinal symptoms, such as nausea, vomiting, diarrhea and abdominal pain in addition to the aforementioned respiratory symptoms or, in rare cases, as a distinct presentation of illness (3). In several studies, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) RNA has been found in stool samples from infected individuals, and its viral receptor, angiotensin-converting enzyme 2 (ACE2), is known to be over expressed all across the length of the gut mucosa, with an increased expression in the small bowel and colon (3). These data suggest that SARS-CoV-2 can infect and multiply effectively in the gastrointestinal system, which may

have consequences for disease treatment, transmission and infection control (4). Even though abdominal pain syndrome suggests acute appendicitis, it is crucial to consider SARS-CoV-2 infection as a potential diagnosis during this pandemic era. Prior to emergency surgery, screening for a co-infection may change the patient circuit and force a re-evaluation of the therapeutic strategy. In rare situations, it may even lead to a differential diagnosis that requires a markedly different medical therapy rather than surgery (5). Due to the high infectivity and potential for extensive lung damage, healthcare professionals have to react quickly to treat individuals who have been diagnosed with COVID-19, while they are concurrently suffering from other diseases, such as acute appendicitis. However, there have been reports of a few cases of acute appendicitis associated with SARS-CoV-2 infection (7). The gold standard of treatment for acute appendicitis is appendectomy. However, research has indicated that conservative care with intravenous antibiotics can result in equivalent results and can be used as a substitute in some individual (6,7,8). Appendectomy in patients with acute appendicitis who suffer from COVID-19 is challenging, since it entails significant surgical risks for the patients, as well

as dangers for healthcare workers who are exposed to SARS-CoV-2. While medical treatment decreases the morbidity and mortality associated with surgery, it comes with a high possibility of treatment failures, which can lead to perforation, peritonitis and even death (9). COVID-19-associated acute appendicitis has also been reported during pregnancy (10). Ovoid associated acute appendicitis in adults (11).

### Case presentation:

#### Case 1:

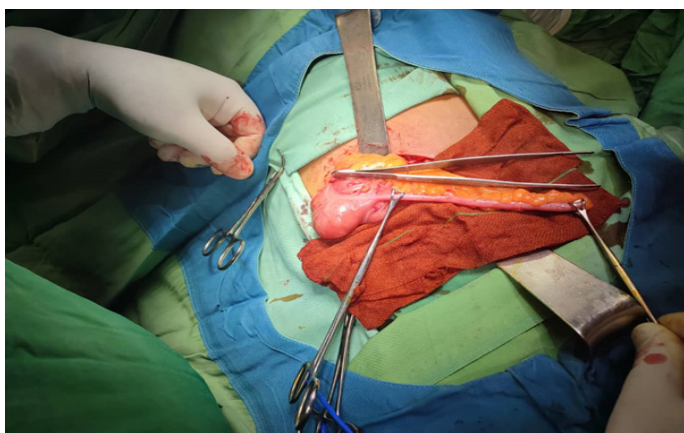
A 21 years old male with nausea, vomiting, abdominal pain, Leukocytosis referred to surgery part, with Alvarado's scale acute appendicitis is the diagnosis and surgery performed. After surgery his Covoid 19 PCR test was positive



Figure1: Acute Appendicitis

#### Case2:

A 26 years old male with nausea, vomiting, abdominal pain, Leukocytosis referred to surgery part, with Alvarado's scale acute appendicitis is the diagnosis and surgery performed. After surgery his Covoid 19 PCR test was positive.



### Figure2: Acute Appendicitis

#### Case3:

A 20 years old female with nausea, vomiting, abdominal pain, Leukocytosis referred to surgery part, with Alvarado's scale acute appendicitis is the diagnosis and surgery performed. After surgery her Covoid19 PCR test was positive

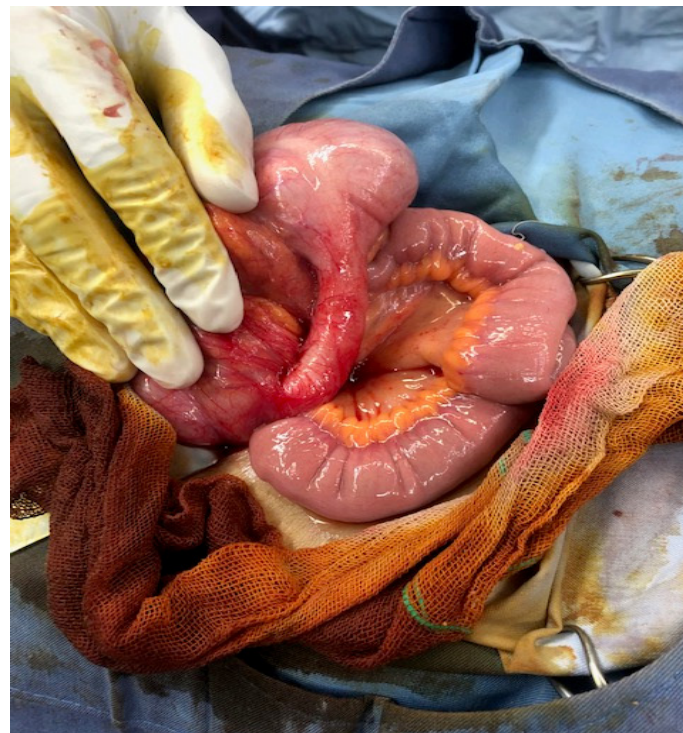


Figure3: Acute Appendicitis

### Conclusion:

The diagnosis of SARS-CoV-2 infection in the patients reported herein was confirmed by sending nasopharyngeal samples for the RT-PCR analysis of COVID-19(12). The majority of the cases in the present study were managed with appendectomy, either open (13).

COVID-19-associated acute appendicitis occurs in young adults, middle-aged individuals and the elderly. It can affect both males and females. Almost all the patients described herein presented with abdominal pain and complaints of various other typical symptoms, such as nausea and vomiting. As regards respiratory systems, some patients did not present with any respiratory symptoms, whereas others had more severe symptoms and suffered from COVID-19-related pneumonia. The diagnosis of acute appendicitis may precede the diagnosis of SARS-CoV-2 infection, may follow the diagnosis of SARS-CoV-2 infection or may be simultaneous to the diagnosis of SARS-CoV-2 infection (6). In conclusion, since SARS-CoV-2 infection

and acute appendicitis share symptoms including fever, anorexia, nausea, vomiting and even severe abdominal pain, the clinical diagnosis for the surgical abdomen in patients with COVID-19 is of limited effectiveness. SARS-CoV-2 may possibly be one of the causes of acute abdominal cases, such as acute appendicitis. Signs and symptoms are typically non-specific, and they may hide life-threatening conditions. Although gastrointestinal symptoms are less common in COVID-19, this infection cannot be ruled out and should be explored in every case. In patients with SARS-CoV-2 infection, a high index of suspicion for surgical issues is necessary. Furthermore, postponing surgical abdomen treatment may result in major complications and an increased risk of mortality. On the contrary, in patients with COVID-19, unnecessary surgery leads to iatrogenic morbidity and mortality, an increased demand on healthcare resources and an increased risk for healthcare professionals working in operative areas. Therefore, a surveillance system and defined rules are required for handling suspected COVID-19 cases that require immediate surgery to prevent the spread of the virus (11). There is no available evidence to indicate that COVID-19 is transmitted by surgical smoke (14,15).

#### **Declarations:**

#### **Ethical Approval and Consent to Participate:**

The content of this manuscript are in accordance with the declaration of Helsinki for Ethics. No committee approval was required. Oral and written consent to participate was granted by the her husband.

#### **Consent for Publication:**

“Written informed consent was obtained from the patient's legal guardian for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.”

#### **Availability of Supporting Data**

It is available.

#### **- Competing Interests:**

The author declares that they have no competing financial interests and nothing to disclose.

**- Funding:** There is no funding.

#### **- Authors' Contributions:**

Ahmad Reza Shahraki is the surgeon of patient and writes this

paper.

The author declares that they have no competing financial interests and nothing to disclose.

#### **- Acknowledgements**

Only in uncommon circumstances of unclear imaging findings or deterioration in the patient's conditions, a diagnostic laparoscopy as a minimal invasive approach may settle the diagnosis and can be extended to a therapeutic maneuver.

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