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Atypical Presentation of Appendicitis Revealing a COVID-19 Infection

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Authors' contributions

This work was carried out in collaboration among all authors. Authors FS, KA and ZS designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors Inamullah, SMA and ZA managed the analyses of the study. Authors FS and SMA managed the literature searches. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

COVID-19 can present in many ways that need to be recognized early, to protect the medical staff from exposure/infection, by isolation of affected patients. We report a case, who presented with acute abdominal pain and on investigations was found to have features of acute appendicitis, without any pulmonary symptoms, and tested positive for COVID-19. He was treated conservatively for appendicitis with antibiotics and recovered well but developed full blown COVID-19 pneumonia after three days. This report signifies that COVID-19 infections may present as acute abdominal pain and appendicitis, in our case, the screening protocol helped us to identify this patient and helped to avoid exposure and possible infection to healthcare staff and avoidance of presumably unnecessary appendectomy.

Keywords: COVID-19; abdominal pain; atypical presentation; appendicitis.

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1. INTRODUCTION

COVID-19 (Corona virus disease-19) has affected almost 82,000 people in the state of Qatar with mortality of less than 1 % up to writing of this manuscript. Since early March 2020, elective cases in our hospital have been reduced to only most time-sensitive patients (e.g. emergency or oncological care). There has also been a push to non-operative management of surgical patients due to safety issues with occult COVID-19 infection and the risks of exposure to staff. We have adopted new policies where only emergency and life-saving surgeries are done round the clock so that these patients receive critical care, as needed. The patients are kept in isolation rooms in the emergency department until the swab results are released.

Patients who test positive for COVID-19 may present initially with acute abdominal pain and no pulmonary symptoms [1]. Acute appendicitis is the most common acute surgical presentation [2]. It demands emergency surgery, but some groups and recent guidelines advocate non-operative care [3-4] which are based on large cohorts and trials [5-6]. There have been many studies on presentation of COVID-19 with some rare incidents. Severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) can appear in different forms of clinical presentation [7-8]. We report the second case, to best of our knowledge, where a young man presented with atypical presentation of acute appendicitis initially and turned out to be COVID positive on screening test. He had no respiratory symptoms as well as CT features suggesting viral infection at the onset of abdominal symptoms which we presume may be the early manifestations of COVID-19. This case highlights the need to be alert for non-specific or atypical presentations, which may delay testing, diagnosis and isolation.

2. CASE PRESENTATION

A 45-year-old gentleman not known to have any previous medical conditions presented to the Emergency Department with complaint of epigastric pain for 3 days. The pain was severe, dull in nature, with no radiation to the back or shoulders. His pain was mainly post-prandial and associated with nausea and two episodes of vomiting containing food particles. He also had anorexia for past few days but no change in bowel habits. He had no cough, flu-like symptoms or shortness of breath. He took paracetamol and ibuprofen for abdominal pain and occasional fever for two days. He lived in a residential camp with 3 roommates, who were all healthy. On examination he was lying comfortably in bed, afebrile with normal pulse and blood pressure and breathing on room air with 99 % oxygen saturation. On abdominal exam there was tenderness in the periumbilical region. However, no tenderness or rebound in the right iliac fossa was appreciated. Hernial orifices were normal and bowel sounds were normally present. His white cell count was 5 $x10^9$ uL with normal neutrophil count. CRP was slightly above the normal range i.e. 15 mg/l. Serum amylase, lipase and lactic acid were within normal range, but his creatinine and urea were 410 umol/l and 11.9 mmol/l respectively. His Alvarado score was 2 so our diagnosis was acute kidney injury possibly due to non-steroidal anti-inflammatory drugs and/or subclinical viral infection.

Patient underwent an abdominal CT scan, for the workup of abdominal pain after hydration, which showed features of acute appendicitis (Fig. 1). The appendix was 8 mm with trace fluid in the right iliac fossa and peri-splenic area. He was admitted and had COVID-19 swab done as part of hospital policy and found to be positive for Corona virus and started on non-operative treatment for appendicitis on intravenous cefuroxime and metronidazole. He was observed for three consecutive days to look for any aggravation of abdominal symptoms and signs, but became almost symptom-free and did not have any abdominal signs. Repeat labs showed normal white cell counts but persistently high urea and creatinine.

In the next few days his condition started to worsen as he developed shortness of breath and difficulty to breath, became dyspneic up to the point that he was intubated and started on assisted ventilation. He was transferred to the intensive care unit and diagnosed as severe pneumonia due to COVID-19. He stayed in ICU with hemodialysis for his acute kidney injury. He started to improve and was extubated after 3 days. He remained on treatment for 2 weeks after being shifted to ward and showed complete recovery of respiratory and renal functions.

3. DISCUSSION

In December 2019, an outbreak of the 2019 novel corona virus disease (COVID-19) caused by the SARS corona virus 2 (SARS-CoV-2) occurred in Wuhan, China [8]. The most common

manifestations of COVID-19 included fever, dry cough, dyspnea, myalgia, fatigue and radiographic evidence of pneumonia. Complications (e.g., acute respiratory distress syndrome [ARDS], arrhythmia, shock, acute cardiac injury, secondary infection, and acute kidney injury) and death may occur in severe cases. [9-12].

Recently, cases of fecal–oral transmission of COVID-19 have been confirmed in the United States and China, indicating that the virus can replicate in both respiratory and digestive tracts [13-14]. A recent study suggests that gastro-intestinal symptoms can be as high as 50% (39.6–50%, nausea (17.3%), diarrhea (12.9%), anorexia (12.2%), abdominal pain (5.8%), belching (5%) and emesis (5%) [15-16]. The main complaint of our patient was periumbilical abdominal pain with nausea, vomiting and anorexia. He was afebrile and had no upper respiratory tract symptoms as well. He had high creatinine due possibly to the NSAIDS he took to treat his pain or retrospectively an early manifestation of the viremia. CT scan abdomen showed features of appendicitis, but the abdominal pain was not typical of appendiceal inflammation along with the Alvarado score of 2. As the COVID-19 tested positive for the patient before admission to the hospital he was decided to be managed conservatively and over time his abdominal symptoms resolved, thus avoiding surgical exposure to the patient. The surgeons should be wary of this clinical presentation of COVID-19 infection and should not be misled by the CT findings of appendicitis and subject the patient for appendectomy.

Saeed et al. [17] performed a retrospective analysis of all acute abdominal pain cases admitted to their institute. Their evaluation revealed that nine of 79 cases tested positive for COVID- 19. These patients had no respiratory symptoms. Six of nine cases had a chest CT scan abnormality. The authors postulated the role of angiotensin-converting enzyme-2 (ACE2) receptor in the pathogenesis of abdominal pain. The virus binds to the ACE2 receptor, and the receptor can be found in the lungs and various GI system structures, including the intestines [18].

Ashraf et al. reported 3 cases who presented as acute abdominal pain but investigated and found to be COVID-19 positive (RT-PCR) afterwards signifying the initial manifestation of viremia. They were managed conservatively and all recovered [19].

The debate these days, is to whether go for laparoscopic appendectomy or manage COVID - 19 patients conservatively. Obviously, the efficacy of non-surgical treatment in patients with suspected or confirmed COVID-19 has never been assessed. We found one case which was diagnosed as COVID-19 pneumonia and appendicitis managed conservatively and the patient improved [20]. The non-operative management of acute appendicitis and its complications provides an additional advantage in terms of limiting the health care professional's

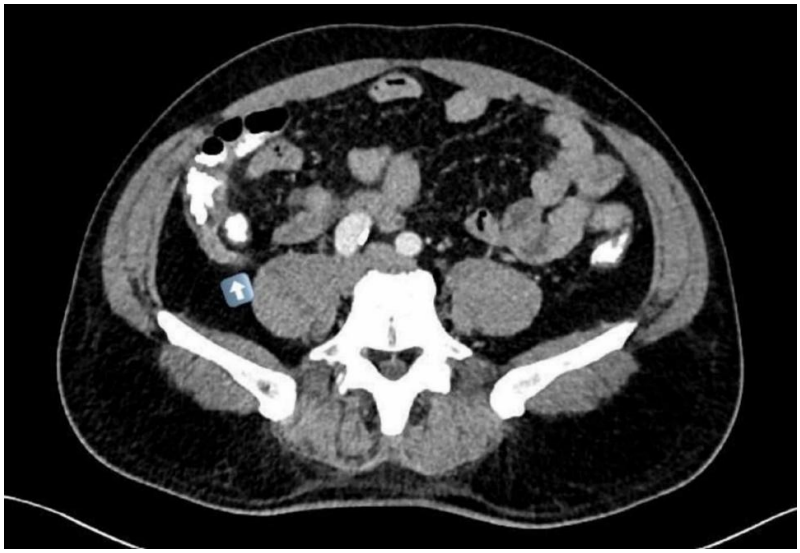

Fig. 1. CT scan of the abdomen. Blue arrow is pointing to inflamed and thickened appendix

exposure to COVID-19, particularly in the setting of limited personal protective equipment. Many health care workers were saved from unnecessary exposure to this patient and immediate implementation of infection control measures were done. Furthermore, the risk for patients developing severe respiratory complications and refractory pneumonia may result in fatal outcome [21].

4. CONCLUSION

GI manifestations of COVID-19 should not be ignored and the medical community should be aware of atypical clinical presentations to help with correct diagnosis, to take the proper measures to place the patient in isolation and to screen such patients for corona virus (SARS-CoV-2). This would protect the health care workers from unnecessary exposure and avoid future staff shortage. Abdominal symptoms may be the initial manifestations of COVID-19 infection and seldomly patient can develop acute appendicitis. Non-operative management should be adopted in uncomplicated appendicitis as these patients can be managed without any serious sequelae.

MRC APPROVAL NUMBER

Hamad Medical Corporation MRC approval MRC: 04-20-388.

CONSENT AND ETHICAL APPROVAL

As per university standard guideline, participant consent and ethical approval have been collected and preserved by the authors.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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