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Case Report

Using new technicque in sigmoid volvulus surgery in patients affected by COVID19

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ABSTRACT

Introduction: Coronavirus pandemic-initiated Wuhan city, Hubei Province, China. It mainly involves respiratory system and cause fever, cough. However, it has other manifestations such as GI system, CNS and skin involvement. It is transmitted mostly through respiratory system, but some researchers claim that in can potentially spread by oral, fecal or intestinal gas. During colorectal surgeries such as volvulus sigmoid, surgeons are at risk of exposure to intestinal gas.

Case presentation: A 57-year-old mentally retarded man came to our emergency department with complain of abdominal pain, constipation, obstipation, nausea, vomiting and abdominal distention. His vital sign was stable and his laboratory data revealed no abnormality. His abdominal x-ray showed intestinal obstruction with suspicious of sigmoid volvulus. His PCR for COVID 19 was positive and his chest CT scan has manifestations of lung involvement. He was proceeded for surgery.

Conclusion: Owing to odds of spread of coronavirus through intestinal gas, in this case, sigmoid colon was removed without evacuation of intestinal gas.

1. Introduction and importance

Coronavirus 2019 causing COVID19 (coronavirus 2019 disease) has affected millions around the world and is ongoing pandemic, to the date [1,2]. It was detected first in Wuhan city, Hubei Province, China [3,4]. COVID19 is a RNA beta-coronavirus [5], that similar to SARS-CoV (Severe acute respiratory syndrome causing coronavirus), binds to angiotensin-converting enzyme 2 (ACE2) receptor through its spike protein [6]. The symptoms initiates after incubation period of around 2–14 days [7]. Symptoms and severity of illness varies among patients based on factors like age, comorbidities such as diabetes mellitus, hypertension and other cardiovascular disease [8]. COVID19 mainly effect respiratory system is commonly presented by cough, fever, myalgia, dyspnea, and fatigue. It can also involve other organs like gastrointestinal system, skin, and central nerve system. Specialist believe that COVID19 can transmit through every route [9] however, droplets by coughing and sneezing are very well-documented evidence [10]. The virus has also been detected in stool, indicating its oral-fecal transmission [11]. On 17th April, Dr. Norman Swan indicated that flatulence can potentially spread virus [12,13]. Additionally, gastrointestinal symptoms are now common among COVID19 patients [14]. During colorectal surgeries such as sigmoid volvulus surgery, surgeons and other medical personnel who are present in the surgical room of surgery are at risk of intestinal gas, that can lead to their exposure to COVID19 [15].

Volvulus sigmoid which describes as twisting of loop of intestine around its mesenteric attachment, is one of the cause of colon obstruction. Symptoms of sigmoid volvulus include nausea, vomiting, abdominal distension, crampy abdominal pain and tenderness. It is diagnosed by clinical presentations and upright plain abdominal radiography seen with ‘‘bent inner tube’’ or ‘‘coffee bean sign’‘. Contrast studies are not mandatory for diagnosis, but bird’s beak deformity is sign of sigmoid volvulus in these studies. Treatment of sigmoid volvulus is emergent, however its managements varies among patients based on patients comorbidity, severity, location of intestine involvement and viability of intestinal wall [16]. If decompression fails or in presence of

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manifestation of peritonitis and gangrene, surgery is required. As stated, there is a chance of COVID19 transmission through abdominal gas, in this study we intend to show how we use a new technique of reducing abdominal gas spread during surgery of volvulus sigmoid in order to minimize the risk of transmission of COVID19.

2. Case presentation

A 57-year-old man was admitted to the emergency with complaints of abdominal pain and swelling. His symptoms started 2 days prior to his referral. He was mentally retard and was kept in senior center. He has sedentary lifestyle. Other symptoms were nausea and vomiting, constipation, obstipation. On his physical exam, his vital signs were stable. His body temperature was normal/elevated? (T = ?). He also has a history of dry cough. He has generalized abdominal tenderness and abdominal distention. No sign of rebound tenderness was present. His abdomen was tympan in percussion and he has abnormal bowl sound in auscultation. His routine laboratory data were within normal range (Hemoglobin (Hb) = 13 mg/dl, White blood cell count (WBC) = 10,540). His ABG was normal and he did not have metabolic acidosis. All his symptoms confirmed intestine obstruction. With suspicion of intestinal obstruction, we order plain abdominal x-ray and CT scan of abdomen and pelvic which revealed distention of sigmoid colon and loss of haustration (Fig. 1). Considering our patients manifestation (dry cough and fever) and COVID19 outbreak, he was tested for COVID19 (PCR and chest CT-scan). Unfortunately, his PCR was positive for coronavirus and his CT scan findings indicated lung involvement (Fig. 2). According to our findings, with diagnosis of sigmoid volvulus, our patient was prepared for surgery. The procedure was led by the 13 years experienced senior general surgeon of the hospital. We observed his intestine for necrosis and gangrene. Sigmoid colon was resected without evacuation of intestinal gas(Fig. 3), the two ends of intestine was sown with GIA stapler. The patient was moved to recovery ward and monitored for postoperative complications and COVID19. He was discharged after 5 days where he did not show any major complications. He did not have breathing problems and his oxygen saturation was also normal.

Owing to hospital burden, he was phone-called for follow-up details, and he did not report any compliant. Until the time of manuscript prescription, patient was in healthy condition. This case report has been reported in line with the SCARE Guideline [17].

Unique identifying number is: researchregistry7091.

Fig. 1. Bilateral multi lobar ground glass opacities consistent with covid-19 infection.

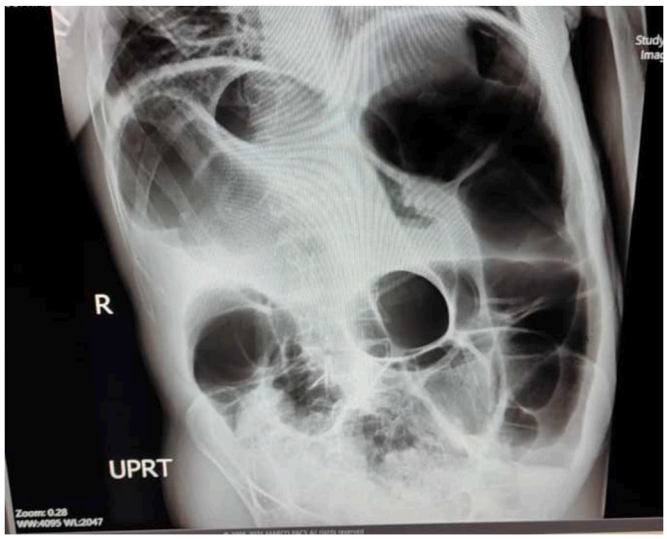

Fig. 2. Severaly-dilated sigmoid colon loops with coffee bean sign and northern exposure sign.

Fig. 3. Top of sigmoid colon lies cranial to transverse colon.

3. Clinical discussion

After sigmoid diverticulitis and colorectal cancer, colon volvulus is third cause of colon obstruction. It can occur at any age and in any gender, however it is common in elderly patients and men [18]. The main risk factor for sigmoid volvulus is long sigmoid mesentery. Male sexuality, advanced age, history of previous abdominal surgery, psychiatric disease, and chronic constipation due to drugs or having sedentary lifestyle are other risk factors. If there is no sign of gangrene and peritonitis, patient resuscitation and endoscopic detorsion, especially with rigid proctoscope, is best choice and its outcome is satisfactory in more than half of patients [19]. But in presence of gangrene or peritonitis or perforation, surgery is recommended. Surgery is done by resection of sigmoid colon in association with terminal colostomy (Hartmann procedure) [20]. During surgery by opening colon, there is a great chance of intestinal gas spread. Exposure to intestinal gas of patients can be a potential way for infection transmission [12]. Gastrointestinal manifestation of COVID19 is documented and evidently

supported by the expression of ACE2 receptors in absorptive enterocytes from ileum and colon. This has also suggested possible oral fecal transmission of the virus [21]. Flatulence can carry micro-particles like bacteria. Studies have suggested that COVID19 can be spread by aerosolized feces and flatulence of infected patients [22].

4. Conclusion

In this case, we took out sigmoid colon without evacuation of intestinal gas and suture two ends with GIA stapler. Considering coronavirus outbreak and strength of this virus to infect people in different ways, in this study, we aim to introduce a new way to reduce risk of contamination.

Sources of funding

None.

Ethical approval

This study was approved by the Research Ethics Board of Tehran University of Medical Sciences. All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Consent

Informed consent was obtained from each participant.

Author contribution

Mojtaba Ahmadinejad and Dr.Izadmehr Ahmadinejad: conceptualized and designed the study, drafted the initial manuscript, and reviewed and revised the manuscript.

Dr. Ali Soltanian and Dr.Kimiya Ghanbari Mardasi: Designed the data collection instruments, collected data, carried out the initial analyses, and reviewed and revised the manuscript.

Dr. Noshin Taherzade: Coordinated and supervised data collection, and critically reviewed the manuscript for important intellectual content.

Registration of research studies

Name of the registry:
Unique identifying number or registration ID: N/A
Hyperlink to your specific registration (must be publicly accessible and will be checked):N/A

Guarantor

Mojtaba Ahmadinejad.

Declaration of competing interest

The authors deny any conflict of interest in any terms or by any means during the study.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.amsu.2021.102789.

References

[1] N. Farzan, et al., Evaluation of Invasive Ventilation Rate and Comorbidities, Clinical Signs and Lab Findings Among COVID 19 Patients, New Microbes and New Infections, 2021, p. 100925.
[2] Coronavirus disease (COVID-19) - World Health Organization, Available from, www.who.net, 2020.
[3] S. Perlman, Another Decade, Another Coronavirus, Mass Medical Soc, 2020.
[4] H. Lu, C.W. Stratton, Y.W. Tang, Outbreak of pneumonia of unknown etiology in Wuhan, China: the mystery and the miracle, J. Med. Virol. 92 (4) (2020) 401–402.
[5] R. Lu, et al., Genomic characterisation and epidemiology of 2019 novel coronavirus: implications for virus origins and receptor binding, Lancet 395 (10224) (2020) 565–574.
[6] Y. Wan, et al., Information: Read & Look at All below, 2020.
[7] Q. Li, et al., Early transmission dynamics in Wuhan, China, of novel coronavirus–infected pneumonia, N. Engl. J. Med. (2020).
[8] N. Chen, et al., Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study, Lancet 395 (10223) (2020) 507–513.
[9] Y. Kawasaki, et al., Distinct roles of matrix metalloproteases in the early-and late-phase development of neuropathic pain, Nat. Med. 14 (3) (2008) 331–336.
[10] Y. Bai, et al., Presumed asymptomatic carrier transmission of COVID-19, Jama 323 (14) (2020) 1406–1407.
[11] C. Chen, et al., SARS-CoV-2–positive sputum and feces after conversion of pharyngeal samples in patients with COVID-19, Ann. Intern. Med. (2020).
[12] A. Abdullah, et al., A perspective Study on oral-fecal transmission of COVID-19, its Prevention and Management, International Cardiovascular Forum Journal (2020).
[13] N. Farzan, et al., Invasive mechanical ventilation and clinical parameters in COVID19 patient: can age be a factor? International Journal of Surgery Open 32 (2021) 100344.
[14] N. Farzan, et al., Evaluation of invasive ventilation (intubation) prognosis in patients with Covid-19 symptoms, International Journal of Surgery Open 27 (2020) 149–153.
[15] R. Alizadeh, Z. Aghsaeifard, Does COVID19 activates previous chronic pain? A case series, Annals of Medicine and Surgery 61 (2021) 169–171.
[16] Z. Aghsaeifard, R. Alizadeh, The role of angiotensin converting enzyme in immunity: shedding light on experimental findings, Endocr. Metab. Immune Disord. - Drug Targets (2021).
[17] R.A. Agha, et al., The SCARE 2020 guideline: updating consensus surgical CAse REport (SCARE) guidelines, Int. J. Surg. 84 (2020) 226–230.
[18] B. Badak, E. Aslaner, N. Gambarov, Giant relapse sigmoid volvulus: case report, Galician medical journal 27 (2) (2020).
[19] E.M. Grossmann, et al., Sigmoid volvulus in department of veterans affairs medical centers, Dis. Colon Rectum 43 (3) (2000) 414–418.
[20] H. Asbun, et al., Sigmoid volvulus in the high altitude of the Andes, Dis. Colon Rectum 35 (4) (1992) 350–353.
[21] J. Gu, B. Han, J. Wang, COVID-19: gastrointestinal manifestations and potential fecal–oral transmission, Gastroenterology 158 (6) (2020) 1518–1519.
[22] R. Mukhra, K. Krishan, T. Kanchan, Possible modes of transmission of Novel coronavirus SARS-CoV-2: a review, Acta Biomed. : Atenei Parmensis 91 (3) (2020) e2020036-e2020036.