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Original Research

Acute abdominal emergency surgeries in COVID 19 positive patients in a tertiary care centre in Chhattisgarh: An Original Research

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ABSTRACT:
Background: COVID-19 is a novel pandemic affecting almost all countries of the world. Various complications can result from this viral infection leading to worsening of condition in patients suffering from other surgical emergencies. **Aim:** This study was planned to look for the impact of COVID-19 effects on the spectrum of abdominal surgical emergencies in a tertiary care hospital. **Methods:** 10 patients aged between 50-90 years consisting of 7 males and 3 female subjects; were included in the present study who were suffering from various abdominal pathologies which required emergency surgical interventions. 8 out of 10 patients underwent laparotomy under general anaesthesia with surgery duration varying from 90-120 mins. Data recorded were analysed with the help of descriptive statistical measures. **Results:** It was observed that 3 out of 10 patients (30 %) died due to thrombotic as well as pulmonary complications. ICU stay of the patients varied from 2- 21 days. 6 out of 10 patients (60%) suffered from co-morbidities like diabetes mellitus, hypertension and hypothyroidism. **Conclusions:** We concluded that COVID-19 patients generally deal with thrombotic as well as pulmonary complications which can increase morbidity and mortality especially in case of surgical interventions.
Keywords: COVID-19, emergency surgery, acute abdomen, laparotomy, mortality.

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INTRODUCTION

The severe acute respiratory syndrome virus-2 (SARS CoV-2) virus that causes corona virus disease (COVID-19) was identified in Wuhan, Hubei province of China in December 2019 by the Chinese Centre for Disease and Prevention from the throat swab of a patient. The corona virus infection is found to mainly affect the respiratory system and presents with fever, dry cough, and difficulty of breathing, and lately, the patient may deteriorate due to pneumonia and acute respiratory distress syndrome.[1-8]

Epidemiological studies showed that patients with co-morbidities (like Bronchial Asthma, COPD, Tuberculosis, Diabetes Mellitus, Hypertension, Chronic Kidney Disease, Chronic Liver Failure and Coronary Artery Disease), with history of smoking, history of substance abuse, male gender and age greater than 60 years were more susceptible to develop complications.[9-12]

The outcomes of the patients with corona virus infection undergoing surgery are very variable. Studies revealed that in-hospital mortality of patients with COVID-19 was very high which varied from 1-52% of the hospitalized patients.[13-14]

Surgery during the COVID-19 outbreak is challenging to the patient, health care workers, and non-COVID-19 patients particularly for low and middle-income countries where the limping health care systems were broken with low testing capacity, suboptimal post-operative care, lack of anaesthesia machine filters and limited personal protective equipment. Some studies showed that perioperative mortality of patients with

COVID-19 was very high, while some studies failed to identify significant mortality among patients with COVID-19 undergoing surgical procedures.[13,14]
Investigating the global prevalence and determinants of perioperative outcomes among patients with COVID-19 undergoing a surgical procedure is very important to reduce patient mortality and morbidity through varies strategies including but not limited to the provision of alternative non-surgical intervention for moderate and severe cases, increasing the number of ICU beds, mechanical ventilator, skilled professionals, and integrated monitors and reducing possible risk factors.[15]
In severely affected COVID-19 patients, the incidence of gastrointestinal complications is high (73.8%). The factors accountable for this digestive involvement are not clearly defined. Pathophysiological hypotheses include microvascular thrombotic events leading to the occurrence of gastrointestinal ischemia.[16,17]

AIM OF THE STUDY

This study was planned to look for the impact of COVID-19 effects on the spectrum of abdominal surgical emergencies in a tertiary care hospital.

METHODOLOGY

10 patients aged between 50-90 years consisting of 7 males and 3 female subjects were included in this retrospective cross sectional observational study. All these cases presented between April 1, 2020 to November 30, 2020 with various abdominal pathologies requiring emergency surgical intervention. Patients in this cohort did not present with a clinical suspicion of COVID, but rather were being evaluated for interventional procedures in an effort of determining pre procedural risks and turned out to be COVID positive. Clinical decision for operative intervention was not based on SARS-CoV-2 results. Data recorded were analysed with the help of descriptive statistical measures like frequency distribution.

RESULTS

It was noticed that these cases presented with chief complaints of abdominal pain, abdominal distention, vomiting to the emergency care. 8 patients underwent laparotomy general anaesthesia (lavage, diversion loop ileostomy, resection & anastomosis, end ileostomy) (Table 1) with surgery duration varying from 90-120 mins. 4 out of 8 patients suffered from co-morbidities like Diabetes Mellitus, Hypertension and Hypothyroidism.
It was observed that 3 out of 10 patients (30%) died due to thrombotic as well as pulmonary complications (Table 2). ICU stay of the patients varied from 2- 21 days. 3 of the 5 patients who were discharged were also on post op ventilator support as well.
It was observed that due to COVID-19 infection the mortality of patients in our present study increased and was statistically significant (0.047) and leading cause of death which was observed was due to pulmonary complications thereafter (p=0.03) (Table 3).

Table 1- Emergency treatments patients received in the present study

Patient No.	Presenting abdominal symptoms	Diagnosis	Surgery
1	Abdominal pain	Appendicular perforation	None
2	Abdominal pain, Distention	Sealed off duodenal perforation	Laparotomy + lavage + FJ
3	Abdominal pain	Pancreatic transection due to RTA	Laparotomy + lavage + FJ
4	Abdominal pain, Distention	Colonic perforation	Laparotomy + Primary repair + diversion loop ileostomy
5	Abdominal pain	Appendicular perforation	Laparotomy + resection
6	Abdominal pain, vomiting	Colonic perforation	Laparotomy + Primary repair + diversion loop ileostomy
7	Abdominal pain, vomiting	Obstructed incisional hernia	Open Rives Stoppa repair
8	Abdominal pain, vomiting	Acute Appendicitis	None
9	Abdominal pain, Distention	S.A.I.O. due to jejunal stricture	Laparotomy + resection & Anastomosis
10	Abdominal pain, Distention	Ileal perforation	Laparotomy + Primary repair + end ileostomy

Table 2- Post-operative status of patients in the present study

Patient No.	ICU stay	Current status	Complication leading to death
1	-	Died on table due to MI	Thrombotic
2	21	Discharged	-
3	14	Discharged	-
4	13	Died on POD 13 due to MI	Thrombotic
5	10	Died on POD 10 due to ALI	Pulmonary
6	3	Discharged	-
7	5	Discharged	-
8	4	Discharged	-
9	7	Discharged	-
10	5	Discharged	-

Table 3- Data recorded in the present study

Variables	Mean ±SD	P value
ICU stay of patients	1.36±1.12	0.055
Mortality	1.15±0.99	0.047
Death due to pulmonary complications	1.03±0.87	0.03
Death due to thrombotic complications	1.67±1.17	0.67

**p value <0.05 is significant*

DISCUSSION

Corona viruses commonly cause respiratory and/or enteric infections. However, the hallmark symptoms of COVID-19 are those of acute lower respiratory diseases.[18,19] Nonetheless, the involvement of the digestive system is increasingly studied. In a systematic review with meta-analysis of more than 6000 patients, the grouped prevalence of digestive symptoms and digestive co-morbidities was 15% and 4% respectively. Higher rates of gastrointestinal symptoms were found in severe COVID-19 infections, and their exclusive presentation (about 10% of patients) resulted in delayed diagnosis. The new onset of gastrointestinal symptoms was predictive of a severe disease course.[20]

Visceral infarction should be considered in COVID-19 patients with severe abdominal pain.[22] As clinical examination of intubated and sedated patients can be misleading; CT scans of chest and abdomen should be performed in case of a clinical degradation of unknown aetiology.[21] Although COVID-19 can entail hypercoagulability, we cannot say for sure that the hypercoagulability and intramural micro-thrombi were caused or aggravated by SARS-CoV-2 infection.[23] Sigmoid ischemia patients are found to have mucosal necrosis and discharge, with intense peri-diverticular lymphoplasmacytic infiltration and permeable vasculature, uncertainly a complication of COVID-19 disease.[23]

Currently, no specialized medication is available for the treatment of SARS-CoV-2 infection, and supportive measures remain the main-stay of COVID-19 treatment. Thus, the patient's immune function is a major determinant of the disease severity, and populations with low immune function, such as older individuals are more vulnerable and have high mortality after COVID-19 infection. Surgery may not only cause immediate impairment immune function, but also induce early systemic inflammatory response. Similar to the Middle East Respiratory Syndrome Coronavirus (MERS-CoV) infection, the SARS-CoV-2 infected lung could induce and increase the amount of macrophage and neutrophil infiltration, and increase the levels of pro-inflammatory cytokines and chemokines. And, the high levels of circulating inflammatory cytokines have been reported to be correlated with the severity of illness in patients infected with the 2019 novel coronavirus (SARS-CoV-2).[24]

CONCLUSION

Patients with acute abdomen who undergo pre-procedure testing have a significant increased likelihood of having unrecognized COVID 19. The study concludes that SARS-CoV-2 infection may contribute to the pathogenesis of acute abdomen with an increase in surgical mortality and complications. All surgical patients with COVID-19 pneumonia require close monitoring and early management.

REFERENCES

1. Asadi-Pooya AA, Simani L. Central nervous system manifestations of COVID-19: a systematic review. J Neurol Sci. 2020;413:1-4.
2. Basu-Ray I, Soos MP. Cardiac Manifestations Of Coronavirus (COVID-19): StatPearls [Internet]. Treasure Island, USA: StatPearls Publishing; 2020.

3. Gu J, Han B, Wang J. COVID-19: gastrointestinal manifestations and potential fecal–oral transmission. Gastroenterology. 2020;158(6):1518–9.
4. Hajifathalian K, Krisko T, Mehta A, Kumar S, Schwartz R, Fortune B, Sharaiha R, on behalf of WCM-GI research group. Gastrointestinal and Hepatic Manifestations of 2019 NovelCoronavirus Disease in a Large Cohort of Infected Patients From New York: Clinical Implications. Gastroenterology. 2020; https://doi.org/10.1053/j.gastro.2020.05.010.
5. Kumar A, Arora A, Sharma P, Anikhindi SA, Bansal N, Singla V, et al. Gastrointestinal and hepatic manifestations of Corona virus Disease-19 and their relationship to severe clinical course: a systematic review and metaanalysis. Indian J Gastroenterol. 2020:1–17.
6. Mao L, Jin H, Wang M, Hu Y, Chen S, He Q, et al. Neurologic manifestations of hospitalized patients with coronavirus disease 2019 in Wuhan, China. JAMA Neurology. 2020;77(6):683–90.
7. Tang K, Wang Y, Zhang H, Zheng Q, Fang R, Sun Q. Cutaneous manifestations of the coronavirus disease 2019 (COVID-19): a brief review. Dermatol Ther. 2020;33(4):e13528. https://doi.org/10.1111/dth.13528.
8. Thakkar S, Arora S, Kumar A, Jaswaney R, Faisaluddin M, Din MAU, et al. A Systematic Review of the Cardiovascular Manifestations and Outcomes in the Setting of Coronavirus-19 Disease. medRxiv. 2020. https://doi.org/10.1101/2020.08.09.20171330.
9. Guan W-J, et al. Comorbidity and its impact on 1590 patients with Covid-19 in China: a nationwide analysis. Eur Respir J. 2020;55:2000547. https://doi.org/10.1183/13993003.00547-2020.
10. Mao R, Liang J, Shen J, Ghosh S, Zhu L-R, Yang H, et al. Implications of COVID-19 for patients with pre-existing digestive diseases. Lancet Gastroenterol Hepatol. 2020;5(5):426–8.
11. Richardson S, Hirsch JS, Narasimhan M, Crawford JM, McGinn T, Davidson KW, et al. Presenting characteristics, comorbidities, and outcomes among 5700 patients hospitalized with COVID-19 in the New York City area. JAMA. 2020;323(20):2052–9. https://doi.org/10.1001/jama.2020.6775.
12. Yang J, Zheng Y, Gou X, Pu K, Chen Z, Guo Q, et al. Prevalence of comorbidities in the novel Wuhan coronavirus (COVID-19) infection: a systematic review and meta-analysis. Int J Infect Dis. 2020;94:91–5.
13. Seeliger B, Philouze G, Cherkaoui Z, Felli E, Mutter D, Pessaux P. Acute abdomen in patients with SARS-CoV-2 infection or co-infection. Langenbeck's Arch Surg. 2020:1–6.
14. Casanova J, Pissarra D, Costa R, Salgueiro E, Pinho P. Cardiothoracic surgery during the Covid-19 pandemic: perioperative care, safety, and surgical results. J Card Surg. 2020;35(9):1–6.
15. Stoneham AC, Apostolides M, Bennett PM, Hillier-Smith R, Witek AJ, Goodier H, et al. Early outcomes of patients undergoing total hip arthroplasty for trauma during COVID-19. Bone Joint Open. 2020;1(7):438–42.
16. Kaafarani HMA, Moheb ME, Hwabejire JO, Naar L, Christensen MA, Breen K, Gaitanidis A, Alser O, Mashbari H, Bankhead- Kendall B, Mokhtari A, Maurer L, Kapoen C, Langeveld K, El Hechi MW, Lee J, Mendoza AE, Saillant NN, Parks J, Fawley J, King DR, Fagenholz PJ, Velmahos GC (2020) Gastrointestinal complications in critically ill patients with COVID-19. Ann Surg 272:e61–e62. https://doi.org/10.1097/SLA.0000000000004004
17. Patel KP, Patel PA, Vunnam RR, Hewlett AT, Jain R, Jing R, Vunnam SR (2020) Gastrointestinal, hepatobiliary, and pancreatic manifestations of COVID-19. J Clin Virol 128:104386
18. Sirinarumitr T, Paul PS, Kluge JP, Halbur PG (1996) In situ hybridization technique for the detection of swine enteric and respiratory coronaviruses, transmissible gastroenteritis virus (TGEV) and porcine respiratory coronavirus (PRCV), in formalin-fixed paraffin embedded tissues. J Virol Methods 56(2):149–160. https://doi.org/10.1016/0166-0934(95)01901-4
19. Perlman S, Netland J (2009) Coronaviruses post-SARS: update on replication and pathogenesis. Nat Rev Microbiol 7(6):439–450. https://doi.org/10.1038/nrmicro2147
20. Mao R, Qiu Y, He JS, Tan JY, Li XH, Liang J, Shen J, Zhu LR, Chen Y, Iacucci M, Ng SC, Ghosh S, Chen MH (2020) Manifestations and prognosis of gastrointestinal and liver involvement in patients with COVID-19: a systematic review and metaanalysis. Lancet Gastroenterol Hepatol 5:667–678. https://doi.org/10.1016/S2468-1253(20)30126-6
21. Ai T, Yang Z, Hou H, Zhan C, Chen C, LvW, Tao Q, Sun Z, Xia L (2020) Correlation of chest CT and RT-PCR testing in coronavirus disease 2019 (COVID-19) in China: a report of 1014 cases. Radiology:200642.
22. Besutti G, Bonacini R, Iotti V, Marini G, Riva N, Dolci G, Maiorana M, Spaggiari L, Monelli F, Ligabue G, Guaraldi G, Rossi PG, Pattacini P, Massari M (2020) Abdominal visceral infarction in 3 patients with COVID-19. Emerg Infect Dis 26(8): 1926–1928. https://doi.org/10.3201/eid2608.201161
23. IgnatM, PhilouzeG,Aussenac-Belle L, FaucherV, Collange O, Mutter D, Pessaux P (2020) Small bowel ischemia and SARS-CoV-2 infection:an underdiagnosed distinct clinical entity. Surgery 168:14–16
24. Zhou J, Chu H, Li C, et al. Active replication of middle east respiratory syndrome coronavirus and aberrant induction of inflammatory cytokines and chemokines in human macrophages: implications for pathogenesis. J Infect Dis 2014;209(9)1331-42.