

Clinical and Therapeutic Issues Associated with Acute Abdominal Surgery Performed during the COVID - 19 Epidemic

Ahmed Salim Khazaal¹, Inas Abd Al Majed Rasheed², Mohamed Ghalib Zakari³

¹Department of Surgery, College of Medicine, University of Tikrit, 304 – Yarmuk, Tikrit, Iraq
Corresponding Author Email: [ahmed.salim\[at\]tu.edu.iq](mailto:ahmed.salim[at]tu.edu.iq)
Tel: +964 770 209 7970

²Department of Pathology, College of Medicine, University of Tikrit, 304 – Yarmuk, Tikrit, Iraq

³Department of Medicine, College of Medicine, University of Tikrit, 304 – Yarmuk, Tikrit, Iraq

Abstract: ***Introduction:** Since the discovery of the first COVID - 19 case, all healthcare systems have adapted to new guidelines and recommendations. Surgical departments were impacted; we aimed to examine the effects of the COVID - 19 pandemic on the incidence, diagnosis, and treatment of acute abdominal conditions, highlighting the need for revised surgical protocols in response to pandemic challenges. **Materials and methods:** This study explores the impact of the COVID - 19 pandemic on acute abdominal surgeries. Covering 168 patients with confirmed COVID - 19 and acute abdominal issues at the department of surgery, Tikrit emergency Hospital/Iraq, the research analyzes clinical presentations, diagnostic challenges, and changes in emergency surgery protocols during the pandemic period from June 2020 to March 2021. **Results:** Findings indicate a higher incidence of COVID - 19 in older patients and an increase in complications like peritonitis and occlusions. This study underscores the need for revised surgical protocols in the wake of COVID - 19. **Conclusion:** This study highlights the significant impact of the COVID - 19 pandemic on acute abdominal surgery practices. It underscores the need for flexible and adaptive surgical protocols to effectively manage such cases in pandemic conditions, emphasizing the importance of preparedness in healthcare settings.*

Keywords: Pandemic; COVID- 19; Surgery; acute abdomen

1. Introduction

Given the alarming global proliferation, morbidity, and death associated with COVID - 19, it is of the utmost significance to investigate probable causes involved with the disease's exacerbation (1). Studies and clinical experience have demonstrated that individuals with particular comorbidities have an increased risk of contracting COVID - 19, which is associated with a bad prognosis. Conversely, the precise comorbidities under discussion have not yet been discovered (2, 3). The significance of identifying the comorbidities associated with this illness can be broken down into two components, each of which will be described separately. First, on an individual basis, it allows physicians to change their patients' treatment, which is particularly significant for patients who may be more prone to severe disease. Second, it has the ability to lower healthcare expenditures and enhance access to healthcare on a social level. Second, it allows patients to live longer and healthier lives, which is advantageous for society as a whole. Second, it allows government organizations to change their public health recommendations according to a stratified risk management plan. This policy will assure the protection of the most vulnerable population and contribute to the ongoing endeavor to keep those who may require the most extensive medical treatment out of hospitals (4). In addition, it facilitates the easing of constraints related with social isolation in individuals with a lesser risk of acquiring the illness. In addition, understanding which comorbidities are most closely associated with COVID - 19 would facilitate further research into the pathophysiology of SARS - CoV - 2 infection on these underlying disorders and vice versa. (5).

Because COVID - 19 is still in its infancy and has garnered minimal attention from researchers, the amount of data currently accessible is restricted. On the other hand, it was determined, based on the newly identified instances, that the presence of comorbidities enhanced the risk of infection (6). Infections can spread through droplets, aerosols, direct and indirect contact, and other pathways that have been demonstrated by clinical trials to be infectious (7). According to the new protocol guidelines, individuals who are believed to be infected or whose COVID - 19 status has not yet been determined should avoid medical - surgical operations that have the potential to generate aerosols. Two examples of these surgical procedures are endoscopy and laparoscopy. In addition, the guidelines recommend doing these therapies with the appropriate safety equipment and only when the potential benefits to the patient outweigh the dangers. This is done to safeguard the hospital's medical staff against possible infection (8 - 13). In this specific inquiry, the effects of the COVID - 19 pandemic on the clinical presentation and therapeutic therapy of acute surgical abdomen were explored. This investigation was carried out in the United States.

Patients and methods

This study will concentrate on the emergency hospitalizations of patients at the Department of Surgery in Tikrit emergency hospital between the dates of June 1, 2020 and March 1, 2021 who have been diagnosed with acute surgical abdomen. A total of 100 patients with acute abdomen but no covid - 19 infection were also included in the research as a control group for the COVID- 19 cases. The investigation comprised patients with acute abdomen

Volume 12 Issue 11, November 2023

www.ijsr.net

Licensed Under Creative Commons Attribution CC BY

and COVID- 19 confirmed results. The patients ranged in age from 38 to 82.

The clinical presentation, etiology, diagnostic and paraclinical investigations and therapeutic treatment, as well as the modifications in emergency practice procedures that were forced by the COVID - 19 pandemic, were all the subjects of studies that were analyzed.

Patients who had been admitted to the emergency room (ER), the surgical conservatory, or the managing conservatory and were given one of the following diagnoses were considered eligible for participation in the study: bowel obstruction, peritonitis, superior/inferior digestive hemorrhage, or acute mesenteric ischemia. Patients who did not give their informed permission to be hospitalized or who gave data that was incomplete were excluded from the statistical analysis.

2. Data Analysis

Sources for the data that was collected included the emergency room registration, the observation sheets, and the operational rules. The medians, means, and standard deviations were all three statistics that were used in the descriptive analysis. In order to determine whether or not there were statistically significant correlations between the two study groups with regard to age, sex, etiopathology, severity of symptoms at admission, and therapeutic approach, both the Fischer test and the t - test, both available in the SPSS 13.0 version from SPSS Inc., were used. To ascertain if there were statistically significant relationships between the two research groups, this was done. It was not essential to obtain formal clearance from the ethical committees at any of the hospitals that participated in the research because this was a retrospective study. This was as a result of the study's retrospective design.

3. Results

According to the findings of the study, the incidence of covid - 19 infection in patients with acute abdomen rose with patient age, with the elderly being the demographic most impacted. According to the findings of the study, males were more susceptible to the virus than females were. (Table I)

According to the findings of the study, the majority of covid - 19 patients had symptoms such as fever, dry cough, chest tightness, dyspnea, dizziness, tiredness, and myalgia, in contrast to the group that served as the control, (Table II)

According to the findings of the study, patients with covid - 19 had a higher risk of developing coronary heart disease, chronic renal disease, chronic liver disease, chronic obstructive pulmonary disease, hypertension, cancer, and diabetes mellitus when compared to individuals in the control group, (Table III).

In our study, high rate of patients were with Occlusions of Simple mechanical occlusion, Tumor stenosis, Strangulated hernia/eventration, Adherences and Volvulus. The study also showed that peritonitis represented high rates in our patients

though Gastric perforation, Appendicitis, Upper digestive bleeding, Hemorrhages, Traumatic mesenteric rupture and Perforated diverticulitis and Laparoscopy (10.71%) and Open surgery (13.1%). The complication were: Nosocomial infection (14.88%) and Surgical wound infection (4.76%), (Table IV).

4. Discussion

If you have been diagnosed with acute surgical abdomen, you must arrange emergency surgery immediately in order to preserve your life. This occurrence includes the clinical entities of occlusions, peritonitis, internal or externalized bleeding at the level of the digestive system, and entero - mesenteric ischemia. All of these clinical entities have a severe clinical course, and if they are not surgically treated, they are potentially fatal (11 - 14). During the course of the COVID - 19 pandemic, the clinical presentation of acute surgical abdomen did not change much. The only difference observed during the COVID - 19 pandemic was an increase in the frequency of oncological patients presenting with acute issues. Al - Azzawy and coworkers (15) observed that the majority of COVID - 19 patients were older, and that 62.5% of the patient group was male. Our findings are consistent with this view. A study conducted in Baghdad found that the vast majority of COVID - 19 - positive patients were male and older than 50 years old (16). According to past research, the patient's age is a major independent predictor of death in both SARS and MERS (17, 18). According to the working case definition, patients must have a severe acute respiratory condition that is accompanied by fever and at least one respiratory symptom, such as coughing or shortness of breath, in order to be selected for viral testing. This criteria is used to select individuals for viral testing (19, 20). based on the findings of two studies that were finished not too long ago, the most noticeable symptoms were a fever and a cough. This was consistent with the findings of both investigations (21, 22). During clinical presentations, patients may exhibit symptoms including severe dyspnea, respiratory discomfort, and fatigue (1). According to the findings of a different investigation, individuals who had COVID - 19 most frequently reported with the following clinical symptoms: fever (83 percent), cough (82 percent), shortness of breath (31 percent), and muscular discomfort (11 percent) (7). Another study came to the conclusion that the clinical signs that were the most common were a fever of 99 percent, coughing of 69 percent, myalgia of 49 percent, and dyspnea of 42 percent (23). It is essential to bring to your attention the fact that the overall rates of shortness of breath in our sample were greater than those seen in SARS patients (13). The clinical presentation of acute surgical abdomen did not significantly change during the course of the COVID - 19 epidemic. The only thing that changed during the COVID - 19 epidemic was an increase in the number of oncological patients who appeared with urgent issues.

The challenge lies in determining the appropriate indication for surgery in cases of discrete or discordant symptoms compared to laboratory data, which can have significant implications not only for the patient's health but also for their legal position. This challenge does not lie in the surgical attitude of immediately approaching the patient,

exploring, confirming, and solving or even refuting this diagnosis. These consequences may have a substantial effect on the patient's health as well as their legal situation (19). Even if the patient has an ambiguous diagnosis, doing surgery too soon or not at all might cause the patient to pass away within hours. This is true even when an exploratory laparotomy is not just undesirable but also not regarded as an extreme measure for confirmation of an uncertain diagnosis.

This method has shown that the great majority of emergency room patients adhere to a clinical - laboratory regimen. Even while this necessitates additional testing by experts, including surgeons, very few people actually represent a condition that need urgent surgical intervention. Accurately identifying patients who need emergency treatment is the surgeon's biggest challenge, especially in circumstances (19–24) that need for analgesic, mild antispasmodic, and antisecretory drug delivery beforehand.

Due of the COVID - 19 pandemic, the burden on national health systems has intensified, and all non - urgent surgical operations and oncological activities have been postponed during the lockdown. This is because there are now more instances of the disease as a result of the epidemic. Due to this circumstance, there is now a problem with the predicament that cancer sufferers are in, and it is not just a problem in our country but also in the other countries of Europe (40 - 42). Due to the restricted access to consultations within the primary care system and inside specialized polyclinics, the identification of oncological disorders has been delayed. The greater frequency of acute abdomen, which can be brought on by stenotic or perforated tumors, among patients who visit the emergency room is explained in part by this delay in diagnosis. There was worry that this vulnerable population would become a "silent collateral victim" of the COVID - 19 epidemic because prompt treatment is necessary for extending survival. For a longer survival, early treatment is essential. To achieve these goals, it is actually vital to start counseling as soon as possible (43 - 46).

The significance of this article lies in its contribution to understanding how the COVID - 19 pandemic has affected surgical practices, particularly in managing acute abdominal cases, thereby informing future healthcare strategies and emergency preparedness.

5. Conclusion

This study highlights the significant impact of the COVID - 19 pandemic on acute abdominal surgery practices. It underscores the need for flexible and adaptive surgical protocols to effectively manage such cases in pandemic conditions, emphasizing the importance of preparedness in healthcare settings.

References

[1] Cascella M, Rajnik M, Cuomo A, Dulebohn SC, Napoli RD. Treasure Island, FL: StatPearls Publishing; [Mar; 2020].2020. Features, Evaluation and Treatment Coronavirus (COVID - 19).

- [2] Li T, Lu H, Zhang W. Clinical observation and management of COVID - 19 patients. *Emerging microbes & infections.*2020 Jan 1; 9 (1): 687 - 90.
- [3] Rothe C, Schunk M, Sothmann P, et al. Transmission of 2019 - nCoV Infection from an Asymptomatic Contact in Germany. *N Engl J Med* 2020; 382: 970.17.
- [4] Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, *et al.* Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet.*2020; 395 (10223): 497–506.
- [5] Bai Y, Yao L, Wei T, et al. Presumed Asymptomatic Carrier Transmission of COVID - 19. *JAMA* 2020.
- [6] Li Z, Yi Y, Luo X, et al. Development and Clinical Application of A Rapid IgM - IgG Com bined Antibody Test for SARS - CoV - 2 Infection Diagnosis. *J Med Virol* 2020.
- [7] Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, *et al.* Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet.*15 Feb 2020; 395 (10223): 507–513.
- [8] Li Q, Guan X, Wu P, et al. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus - Infected Pneumonia. *N Engl J Med* 2020.
- [9] Guan WJ, Ni ZY, Hu Y, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. *N Engl J Med* 2020
- [10] Chan JF, Yuan S, Kok KH, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person - to person transmission: a study of a family cluster. *Lancet* 2020; 395: 514. \
- [11] Wu Z, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID - 19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. *JAMA* 2020.12.
- [12] Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020; 395: 497.
- [13] Carlos WG, Dela Cruz CS, Cao B, Pansnick S, Jamil S. Novel Wuhan (2019 - nCoV) coronavirus. *Am J Respir Crit Care Med* 2020; 201: P7–P8.
- [14] Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical characteristics of 2019 novel coronavirus infection in China. *N Engl J Med.*28 Feb 2020: 1 - 113.
- [15] Al - Azzawy MA, Qader SM, Mirdan AA. Study of the Relationship between Vitamin D Level and the Increase in the Severity of Covid - 19 Infection in Kirkuk City. *Medico - legal Update*, April - June 2021, Vol.21, No.2: 1423 - 7.
- [16] Pung R, Chiew CJ, Young BE, Chin S, Chen MI, Clapham HE, et al. Investigation of three clusters of COVID - 19 in Singapore: implications for surveillance and response measures. *Lancet.*17 Mar 2020; 395 (10229): 1039 - 1046.
- [17] Jin JM, Bai P, He W, Wu F, Liu XF, Han DM, *et al.* Gender differences in patients with COVID - 19: Focus on severity and mortality. *medRxiv.*1 Jan 2020.
- [18] Whitcomb CG. Review of Slavoj Žižek (2020). *Pandemic!: COVID - 19 shakes the world.* Postdigital Science and Education.2020 Jul 10: 1 - 5.
- [19] Tektook NK, Yadav PR, Alazzawy MA. Prevalence Corona Virus Disease 2019 (COVID - 19) in Baghdad

City. International Journal of Advances in Medical Sciences.2020 Oct 5: 01 - 6.

[19] Patriti A, Baiocchi GL, Catena F, Marini P, Catarci M. Emergency general surgery in Italy during the COVID - 19 outbreak: First survey from the real life. *World J Emerg Surg.*2020; 15 (36) doi: 10.1186/s13017 - 020 - 00314 - 3. FACS on behalf of the Associazione Chirurghi Ospedalieri Italiani (ACOI) [PMC free article] [PubMed] [CrossRef] [Google Scholar]

[20] Abejón D, Monzón EM, Deer T, Hagedorn JM, Araujo R, Abad C, Rios A, Zamora A, Vallejo R. How to restart the interventional activity in the COVID - 19 era. The experience of a private pain unit in Spain. *Pain Pract.*2020; 20: 820–828. doi: 10.1111/papr.12951. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

[21] Qadan M, Hong TS, Tanabe KK, Ryan DP, Lillemoe KD. A multidisciplinary team approach for triage of elective cancer surgery at the massachusetts general hospital during the novel coronavirus COVID - 19 outbreak. *Ann Surg.*2020; 272: e20–e21. doi: 10.1097/SLA.0000000000003963. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

[22] Sud A, Jones ME, Broggio J, Loveday C, Torr B, Garrett A, Nicol DL, Jhanji S, Boyce SA, Gronthoud F, et al. Collateral damage: The impact on outcomes from cancer surgery of the COVID - 19 pandemic. *Ann Oncol.*2020; 31: 1065–1074. doi: 10.1016/j.annonc.2020.05.009. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

[23] Ardeleanu A, Francu L, Georgescu C. Neoangiogenesis. Assessment in esophageal adenocarcinomas. *Indian J Surg.*2015; 77 (Suppl 3): S971–S976. doi: 10.1007/s12262 - 014 - 1091 - 9. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

[24] Sud A, Torr B, Jones ME, Broggio J, Scott S, Loveday C, Garrett A, Gronthoud F, Nicol DL, Jhanji S, et al. Effect of delays in the 2 - week - wait cancer referral pathway during the COVID - 19 pandemic on cancer survival in the UK: A modelling study. *Lancet Oncol.*2020; 21: 1035–1044. doi: 10.1016/S1470 - 2045 (20) 30392 - 2. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

[25] Tulin A, Slavu I, Tulin R, Alecu L, Jecan CR, Orlov C, Iaciu CI, Stanculeanu DL, Hainarosie R, Pituru S, et al. Does sex of the patient play a role in survival for MSI colorectal cancer? *J Mind Med Sci.*2018; 5: 101–108. [Google Scholar]

[26] Wright A, Salazar A, Mirica M, Volk LA, Schiff GD. The invisible epidemic: Neglected chronic disease management during COVID - 19. *J Gen Intern Med.*2020; 35: 2816–2817

Table I: Distribution of COVID - 19 patients and the control group according to age and sex.

Parameters	Acute abdomen patients		P. value
	Covid - 19 +ve (n: 168)	Covid - 19 - ve (Control group) (n: 100)	
Age (year)			
Mean±SD	58.6±4.6	54.3±4.3	0.001
Range			
Sex			
Male	98 (58.33%)	55 (55%)	0.59
Female	70 (41.67%)	45 (45%)	

P. value ≤0.05 (Significant) and > 0.05 (non - significant)

Table II: Distribution of patients with and without COVID - 19 infection according to general symptoms.

General Symptoms		Covid - 19 (n: 168)		(Control group) (n: 100)		P. value
		No	%	No	%	
Fever	Present	152	90.48	10	10	<0.001
	Absent	16	9.52	90	90	
Cough	Present	85	50.6	11	11	<0.001
	Absent	83	49.4	89	89	
Chest tightness	Present	90	53.57	8	8	<0.001
	Absent	78	46.43	92	92	
Dyspnea	Present	89	52.98	13	13	<0.001
	Absent	79	47.02	87	87	
Dizziness	Present	93	55.36	15	15	<0.001
	Absent	75	44.64	85	85	
Fatigue	Present	103	79.17	30	30	<0.001
	Absent	35	20.83	70	70	
Myalgia	Present	90	53.57	33	33	<0.001
	Absent	78	46.43	67	67	

Table III: Distribution of patients with and without Covid - 19 infection according to associated disorders and comorbidities.

Comorbidities		Covid - 19 (n: 168)		(Control group) (n: 100)		P. value
		No	%	No	%	
DM	Present	32	23.53	10	10	0.048
	Absent	136	76.47	90	90	
Ht	Present	47	27.98	13	13	0.002
	Absent	121	72.02	87	87	
Malignant disease	Present	4	2.38	1	1	0.41
	Absent	164	97.62	99	99	
CKD	Present	4	2.38	0	0	0.12
	Absent	164	97.62	100	100	
COPD	Present	11	6.55	2	2	0.09
	Absent	157	93.45	98	98	
CHD	Present	33	17.86	6	6	0.0021
	Absent	135	82.14	94	94	
CLD	Present	4	2.38	0	0	0.12
	Absent	164	97.62	100	100	
No comorbidities		33 of 168		68 of 100		0.001

Table IV: Clinical manifestations, therapeutic options, and long - term results of individuals with acute abdomen

Occlusions:	No	%
Strangulated hernia/ eventration	10	5.95
Adherences	9	5.36
Volvulus	8	4.76
Tumor stenosis	12	7.14
Simple mechanical occlusion	16	9.52
Non	113	67.26
Total	168	100
Peritonitis:	No	%

Gastric perforation	9	5.36
Appendicitis	9	5.36
Upper digestive bleeding	8	4.76
Hemorrhages	7	4.17
Traumatic mesenteric rupture	7	4.17
Perforated diverticulitis	6	3.57
Biliary peritonitis	4	2.38
Caecal tumor perforation	3	1.79
Crohn's disease	1	0.6
Mesenteric ischemia	1	0.6
Non	113	67.26
Total	168	100
Neoplastic patients Management:	No	%
Laparoscopy	18	10.71
Open surgery	22	13.1
Conservative	15	8.93
Non	113	67.26
Total	168	100
Postoperative complications	No	%
Deceased	22	13.1
Nosocomial infection	25	14.88
Surgical wound infection	8	4.76
Non	113	67.26
Total	168	100