



COVID-19 Masquerading as Postoperative Surgical Complications after Cancer Surgery

Rakesh Sharma¹ · Debashish Chaudhary¹ · Priyanka Goel² · Sachin Khandelwal¹ · Vikram Singh¹ · Rakesh Kapoor²

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Abstract

While the world suffers from pandemic of novel coronavirus infection, also known as COVID-19, the elective surgeries were deferred in most centers due to diversion of services. Cancer surgeries unlike others are considered urgent hence cannot be delayed beyond a point. COVID-19 might disguise itself as prolonged postoperative course and complications. Retrospective audit of cancer surgeries performed from 23rd March 2020 to 31st March 2021 at our cancer center in rural India was done. Up to 3 months after surgery was considered postoperative period for the purpose of this study. Seven hundred ninety-three cancer surgeries were performed. Out of these, eight patients had unusually prolonged postoperative recovery and complications. Symptoms varied from unexplained fever to diarrhea to wound healing problems. Unfortunately, one patient died of complications. Since a lot is yet to be discovered about the virus-host interaction, hence surgeons should take preemptive measures for any unusual postoperative behavior especially in the time of this pandemic and high index of suspicion should be there for coronavirus infection.

Keywords COVID-19 · Postoperative complications · Masquerading

Background

Ours is a rural India-based tertiary cancer center under the aegis of Tata Memorial Center, Mumbai, India. Most of the centers were dedicated to COVID-19 management after the first nationwide lockdown was announced in India in March 2020. Delaying the cancer treatment can have disastrous consequences for the patients; hence, as a uniform policy of Tata Memorial Center, we decided to continue with our cancer services.

Methodology

Electronic medical records were accessed for patient's related data. Since there was no in-house COVID-19 testing facility and testing methods and policies were still being

developed hence during the initial 3 months of the pandemic, preoperative reverse transcriptase polymerase chain reaction (RT-PCR) test was not done for asymptomatic patients except for head and neck oncology cases. All visceral surgeries were admitted for 5 days in ward in the preoperative period to look for any COVID-19-related symptoms. After July 2020, all surgical patients were tested before surgery with RT-PCR on nasopharyngeal swabs.

Results

A total of seven hundred and ninety-three cancer surgeries were performed. During surgeries, all COVID-19-related measures were taken by operation theatre staff including usage of personal protective equipment kits. As per the advisory by the institute, any health care worker with a COVID-19-like symptom was removed from active duty and tested for COVID-19. Disease management group (DMG) wise distribution of surgeries is shown in Table 1. Eight patients had unexpected postoperative period. Patient profile is shown in Table 2. All patients except S.No 2 were tested preoperatively for COVID-19. Patients were tested again in postoperative period if any doubtful symptom.

✉ Sachin Khandelwal
drsachin_khandelwal@yahoo.com

¹ Surgical Oncology, Homi Bhabha Cancer Hospital, Civil Hospital Campus, Sangrur, Punjab, India 148001

² Radiation Oncology, Homi Bhabha Cancer Hospital, Sangrur, India

Table 1 Disease management group wise distribution of surgeries

Disease management group	Number of surgeries
Head and neck	141
Breast oncology	329
Gynec-oncology	145
Uro-oncology	49
Gastrointestinal oncology	105
Bone and soft tissue tumor	21
Thoracic oncology	2
Miscellaneous	1

Discussion

COVID-19 can either infect upper respiratory tract (sinuses, nose, throat) or lower respiratory tract (trachea

or lungs) [1]. Due to affinity for receptor of angiotensin-converting enzyme-2 (ACE 2), which is abundant on type II alveolar cells, lungs are most commonly affected [2]. GI organs are also affected, as there is abundance of ACE-2 receptors in the stomach, duodenum, rectum, and small intestine [3, 4].

Up to 1/3rd of patients may present with GI symptoms. A meta-analysis showed diarrhea is the most common symptom (11.5%) followed by nausea and vomiting and then abdominal pain [5]. Amongst critically ill COVID-19 patients, nearly 2/3rd patients have elevated liver enzymes [6]. Other GI symptoms in sick patients can be acute cholecystitis [7], acute pancreatitis [7], colonic pseudo obstruction [7], and mesenteric ischemia [7]. There is ambiguity on whether there is active viral replication in GI system or is it just the swallowed virus from respiratory infection.

Pathogenesis of hypercoagulable state with COVID-19 infections is unclear. Direct damage to endothelial cells

Table 2 Patient profile

S.No	Age	ASA	Diagnosis	Symptoms	Outcome
1	68	ASA III	Carcinoma urinary bladder: neo-adjuvant chemotherapy followed by radical cystectomy and ileal conduit	<ul style="list-style-type: none"> • 10 weeks after surgery presents with SAIO (vomiting distention and fever) f/b loose stools f/b DVT: COVID negative • Gradually develops respiratory and renal failure: repeat test shows COVID positive 	Died (Clavien-Dindo grade V)
2	66	ASA II Non diabetic	Anorectal melanoma: abdominoperineal resection	<ul style="list-style-type: none"> • Preop COVID testing not done • Dehiscence of perineal sutures: postop day (POD) 8 • Colostomy suture dehiscence: POD10 • Gradually developed fever with cough: tested COVID positive • Wound healing poor: perineal wound resuturing 12 weeks after surgery 	Recovered (CD classification grade IIIb)
3	73	ASAIII	Periapillary tumor: pylorus preserving pancreaticoduodenectomy	<ul style="list-style-type: none"> • Vomiting and fever: POD 5 • Abdominal pain and loose stools • Gradually develops fever with dyspnea: tested COVID positive 	Recovered (CD grade II)
4	73	ASAI	Carcinoma endometrium: open hysterectomy with nodal clearance	<ul style="list-style-type: none"> • Serous wound discharge: POD3 • Gradually develops fever with loose stools: POD6 tested COVID positive 	Recovered (CD grade I)
5	69	ASA III Non diabetic	Carcinoma breast: modified radical mastectomy	<ul style="list-style-type: none"> • Complete wound breakdown after suture removal on POD17 • Develops dyspnoea: tested COVID positive 	Recovered (CD grade IIIb)
6	41	ASAI	Carcinoma colon: right hemicolectomy	<ul style="list-style-type: none"> • Develops loose motions with fever on POD4: tested COVID positive 	Recovered (CD grade I)
7	48	ASAI	Carcinoma breast: breast conservation surgery	<ul style="list-style-type: none"> • Develops fever with poor wound healing in axilla: tested COVID positive 	Recovered (CD grade I)
8	57	ASAI	Carcinoma colon: right hemicolectomy, on adjuvant chemotherapy	<ul style="list-style-type: none"> • 3 months post surgery develops fever with breakdown of laparotomy scar: tested COVID positive 	Recovered (CD grade I)

ASA American Society of Anesthesiologists, SAIO sub acute intestinal obstruction, DVT deep vein thrombosis, POD postoperative day, CD Clavien-Dindo classification

by SARS-CoV-2 (severe acute respiratory syndrome coronavirus-2) virus has been seen. Presence of intravascular catheters and inflammatory cytokines promote vascular damage [8]. Prolonged immobilization in intensive care unit is an additive factor. Changes in circulating prothrombotic factors have been seen in critically ill COVID-19 patients [9, 10].

Renal problems in COVID-19 patients may manifest as acute kidney injury, hematuria, and proteinuria with an increased risk of mortality [11, 12]. Patients with severe SARS-CoV-2 infection can develop skin vasculitis and systemic arterial and venous thromboemboli. It has been attributed to factors such as viral sepsis, hypoxemia, immobility, and vasculitis [13].

Except the patient who underwent abdominoperineal resection, all of our study patients were tested with RTPCR for COVID-19 preoperatively and had a negative report. This alone patient was treated during the 1st wave of COVID-19 in India and rest during the 2nd wave. Fever, diarrhea, and wound breakdown were the most consistent presentation amongst our study patients. Postoperative fever was seen in almost all study patients and typically started after postoperative day 4 unlike usual fever after surgery, which happens within 48 h of surgical procedures. Diarrhea was seen in 4 out of 6 patients who had undergone abdominal visceral surgery. Vomiting was present in two cases. Initially, as expected, diarrhea was attributed to a variable postoperative course especially after a bowel surgery. But with experience we got more vigilant and early repeat testing was advised. Wound breakdowns were sudden and delayed without any antecedent surgical site infection or wound necrosis. Literature review could not provide any evidence of effect of COVID-19 on wound healing but it can be attributed to systemic thrombosis and emboli.

Since most of the problems mentioned above are frequently seen after any major surgery, it becomes very confusing for the treating surgeon to differentiate from COVID-19. The diagnosis is usually delayed and the only way forward is to keep a high index of suspicion especially in countries where the COVID-19 caseload is high.

Conclusion

To the best of our knowledge, this is the only study which has addressed the probable role of COVID-19 in altering the postoperative course in cancer patients. The other two studies in cancer patients from India [14, 15] were audits of surgical procedures and logistic problems faced. A surgeon should keep a high index of suspicion if there

are unusual events even if preoperative COVID-19 testing is negative.

Author Contribution All authors have contributed significantly to the paper and are in agreement with the content of the manuscript.

Declarations

Conflict of Interest The authors declare no competing interests.

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