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COVID-19 PANDEMİ PERİYODUNDA BİR AYLIK CERRAHİ ONKOLOJİ KLİNİK DENEYİMİMİZ

OUR ONE-MONTH SURGICAL ONCOLOGY CLINICAL EXPERIENCE IN COVID-19 PANDEMIC PERIOD

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ÖZ

Giriş: *Çin'de 2019'un sonlarında ortaya çıkan ve daha sonra tüm dünyayı etkileyen COVID-19 enfeksiyonu ilk olarak Mart 2020'de ülkemizde görülmüş ve gerekli önlemlerle bu salgına karşı mücadele başlamıştır. COVID-19 enfeksiyonunun bağışıklığı baskılanmış kişilerde daha yaygın olduğu ve bu gruptaki tedaviye rağmen daha ölümcül bir seyir gösterdiği gözlenmiştir. Kanser tedavisinde önemli bir rol oynayan onkolojik ameliyatlar yapan klinikler, bu dönemde yayınlanan pandemik kılavuz ilkelere uygun olarak kişisel koruyucu ekipman, fiziksel çevre önlemleri ve klinik operasyonel ayarlamaları kullanarak operasyonlara devam etmek zorunda kalmıştır. Bu çalışma, önümüzdeki süreçte COVID-19 ile mücadele sürerken, onkolojik cerrahi girişimlerde oluşturulacak kılavuzlara katkı amacıyla tasarlandı.*

Gereç ve Yöntem: *Bu çalışmada 21 Mart 2015 ile 21 Nisan 2020 tarihleri arasında Bursa Şehir Hastanesi Cerrahi Onkoloji Kliniği 'ne tedavi amacıyla başvuran 44 olgunun verileri analiz edildi.*

Bulgular: *Tedavi edilen 44 olgunun 26'sı (% 59.1) erkek, 18'i (% 40.9) kadındı. Yaş ortalaması 64,25 (22-83) idi. 16 (% 36.4) olguda komorbidite yok iken 28 hastada komorbidite vardı. Tedavi 30 (% 68.2) olguda cerrahi, 11 (% 25) olguda invaziv lokal işlemler ve 3 (% 6.8) olguda tıbbi destek idi. Tedavi edilen hastaların tanısı; kolorektal malignite (14,% 31.8), mide kanseri (7,% 15.9), meme kanseri (4, %9), pankreas kanseri (4, % 9), özofagus kanseri (2,% 4.5) ve diğer kanserler (lenfoma, karaciğer malignitesi, nazofaringeal karsinom, tiroid kanseri, vb., 13, %28.3) idi. Ameliyat öncesi klinik ve laboratuvar COVID-19 pnömoni bulguları olmayan hastalarda, ameliyattan sonra COVID-19 pnömoni bulaşı saptanmadı.*

Sonuç: *Pandemi döneminde kaçınılmaz olarak yapılması gereken kanser ameliyatlarında ameliyat sonrası COVID-19 bulaşını azaltmak uygun hastane şartları ve klavuzlara uymak ile mümkündür. Cerrahi onkoloji kliniklerinin geriye dönük olarak alınacak dersler, COVID-19 gibi gelecekteki salgınlarda hasta yönetimi, halk sağlığının korunması ve cerrahi kliniklerde alınması gereken önlemler açısından COVID-19'dan nasıl etkilendiğini bilmek olmalıdır.*

SUMMARY

Introduction: *COVID-19 infection, emerging in late 2019 in China and subsequently affecting the whole world, was first seen in March 2020 in our country and a fight against this outbreak was begun with taking necessary precautions. It has been observed that COVID-19 infection is more common in immunocompromised individuals and shows a more fatal course despite treatment in this group. Clinics performing oncologic surgeries, which play a key role in cancer treatment, had to continue operations using personal protective equipment, physical environment precautions and clinical operational adjustments in accordance with pandemic guidelines published within this period. This study was designed to contribute to the guidelines to be created in oncological surgical interventions while the fight against COVID-19 continues in the upcoming period.*

Material and Method*: The present paper analyzed the data of 44 cases admitted for treatment purposes to the Surgical Oncology Clinic of Bursa City Hospital between March 21 - April 21, 2020.*

Results: *Among 44 cases treated, 26 (59.1%) were male and 18 (40.9%) were female. The mean age was 64.25 (22-83) years. No comorbidity was present in 16 (36.4%) cases, while 28 patients had comorbidities. Treatment was surgical in 30 (68.2%) cases, invasive local procedure in 11 (25%) and medical support in 3 (6.8%) cases. The diagnoses of treated patients, in descending order of frequency, were colorectal malignancy (14, 31.8%), gastric cancer (7, 15.9%), breast cancer (4, 9%), pancreatic cancer (4, 9%), esophageal cancer (2, 4.5%) and other (lymphoma, liver malignancy, nasopharyngeal carcinoma, thyroid cancer, etc., 13, 28.3%). In patients without clinical and laboratory COVID-19 pneumonia findings before surgery, COVID-19 transmission was not detected after surgery.*

Conclusion*: COVID-19 pneumonia infection was not observed after surgery in the one-month period, after the good isolation of the patients and the applications performed by considering the guidelines. It is important to know how surgical oncology clinics are affected by COVID-19 in terms of lessons to be taken retrospectively, patient management in future outbreaks like COVID-19, protection of public health, and precautions to be taken in surgery clinics.*

INTRODUCTION

The pandemic of COVID-19 is a viral infection that emerged in November 2019 in the Wuhan region of China and affected the entire world thereafter. In our country, the first case was detected on March 10, 2020 (1, 2). COVID, an RNA virus of the Coronaviridae family, has a pattern of symptoms leading to death as a result of severe pneumonia, respiratory failure, ARDS, multiorgan failure by affecting lower respiratory system, or resulting in recovery with myalgia, fatigue, mild fever and flu-like symptoms (3).

Since it is unpredictable in terms of its course in each case, a treatment algorithm is applied to all cases as if the disease would progress to the most severe form. Oncological cases have weakened immune systems due to the nature of cancer, and have been observed to be more susceptible to COVID infection despite all precautions, due to treatments administered such as chemoradiotherapy (4).

The risk of a major operation added on top of the above mentioned treatments would increase the mortality rates incrementally. Nevertheless, there will certainly be some cases requiring the performance of such operations under semi-urgent conditions due to the type, localization and stage of the cancer. The present paper will discuss the interventions applied to oncological cases treated at the Surgical Oncology Clinic of Bursa City Hospital, which was declared a pandemic hospital from the beginning of the pandemic, as well as oncological cases with confirmed and suspected COVID-19 infection along with the protective measures taken by following pandemic guidelines.

This study was designed to contribute to the guidelines to be created in oncological surgical interventions while the fight against COVID-19 continues in the upcoming period.

MATERIALS AND METHODS

The study retrospectively evaluated the medical records of 44 patients admitted to the Surgical Oncology Clinic of Bursa City Hospital for treatment between March 21, 2020 and April 21,

2020. The evaluated parameters included gender, age, comorbidities, causes of admission, degree of urgency level of patient's condition, diagnosis, surgical procedure performed, type of anesthesia, the Clavien-Dindo score, length of hospital stay, presence of COVID-19 pneumonia, perioperative mortality and perioperative morbidity (30 days). Seven cases with findings of COVID-19 pneumonia were evaluated in terms of age, gender, comorbidities, preoperative clinical picture, radiological imaging and laboratory parameters, diagnosis, surgery performed, COVID-19 PCR results, viral pneumonia treatment administered, length of hospital stay, morbidity and mortality. The ethics approvel amended by Bursa City Hospital Ethics Committee of Clinical Research with the number of 2020-10/1. Also, clinical research permission was gained from The Ministery of Turkish Republic of Health (2020-05-13T10_33_22) because of covid-19 releated research.

RESULTS

Among 44 cases treated, 26 (59.1%) were male and 18 (40.9%) were female. The mean age was 64.25 (22-83) years. No comorbidity was present in 16 (36.4%) cases, while 28 patients had comorbidities. These, in descending order of frequency, were hypertension in 7 cases (25%), Diabetes Mellitus in 6 (21%), Cardiovascular Disease in 4 (14.2%) and others (CML, severe malnutrition, COPD and obesity) in 6 (21.8%) patients. Five cases (17.8%) had two or more comorbidities. Treatment was surgical in 30 (68.2%) cases, invasive local procedure in 11 (25%) and medical support in 3 (6.8%) cases. The diagnoses of treated patients, in descending order of frequency, were colorectal malignancy (14, 31.8%), gastric cancer (7, 15.9%), breast cancer (4, 9%), pancreatic cancer (4, 9%), esophageal cancer (2, 4.5%) and other (lymphoma, liver malignancy, nasopharyngeal carcinoma, thyroid cancer, etc., 13, 28.3%). Tables 1 and 2 present elective and emergency surgical procedures performed on these patients, and morbidity and mortality rates separately. Among all surgical procedures, major and minor procedures were performed in 23 (56.1%) and 18 (43.9%) patients, respectively. Type of anesthesia was general in 24 cases (58.5%), locoregional in 15 (36.6%) and sedation in 2 (4.9%). No complication was observed in 18 (43.9%) cases. The Clavien-Dindo Scoring was used for cases with complications. Among 23 cases with complications; 11 (47.8%) cases had Grade 1, 3 (13%) cases Grade 2, 4 (17.4%) cases Grade 3a, 3 (13%) cases Grade 3b and 2 (8.7%) cases Grade 5 complications. Mean length of hospital stay of surgically treated patients was 7.5 (1-22) days.

37 of 44 patients who were not considered for COVID-19 clinically or radiologically were evaluated by clinical evaluation at the time of admission, thorax CT and COVID-19 PCR test. All these evaluations were found to be COVID-19 negative. These patients were followed for signs of COVID-19 infection, including hospitalizations and post-hospitalization for 14 days.

Clinical and radiological signs of viral pneumonia were present in 7 of 44 patients evaluated preoperatively (Figure 1). One case with confirmed and six cases suspected COVID-19 viral pneumonia were evaluated in terms of demographic characteristics, history of contact, clinical, radiological and laboratory data, diagnosis, previous operations and treatments, length of hospital stay and survival (Table 3). Requirements and protocols to be followed for safe surgery in patients with confirmed or suspected COVID-19 have been determined in our country and in the world [1,2,3]. The cases presented here were operated in accordance with such protocols. One case operated due to malignant colorectal obstruction and one case undergoing percutaneous transhepatic cholangiography (PTC) due to biliary obstruction caused by pancreatic head tumor, died. In patients without clinical and laboratory COVID-19 pneumonia findings before surgery, COVID-19 transmission was not detected after surgery.

Table 1. Patients undergoing elective surgery

Diagnosis	Surgical Procedure	Morbidity (Clavien-Dindo)	Mortality
Colorectal Cancer (CRC)	Laparoscopic low anterior resection + protective ileostomy	None	-
	Right hemicolectomy (suspected COVID-19)	5	Exitus
	Right hemicolectomy	None	-
	Low anterior resection + protective ileostomy + partial bladder resection	1	-
	Laparoscopic Miles operation	1	-
	Total colectomy	3b	-
	Laparoscopic low anterior resection	1	-
	Abdominoperineal resection	3a	-
	Colectomy + colostomy	3a	-
Gastric Cancer	Roux-en-y gastroenterostomy	1	-
	Laparoscopic subtotal gastrectomy + d2 dissection	1	-
	Total gastrectomy + partial colon resection	1	-
	Laparoscopic distal esophagectomy + proximal gastrectomy	1	-
	Gastric wedge resection + retroperitoneal mass resection	3a	-
Breast Cancer	Simple mastectomy + AD	None	-
	Segmental mastectomy +SLNB	None	-
	Segmental mastectomy +SLNB	None	-
	Segmental mastectomy +SLNB	None	-
Pancreatic cancer	Diagnostic laparoscopy	None	-
	PTC (suspected COVID-19)	5	Exitus
	Roux-en-y Choledochojejunostomy	1	-
	Roux-en-y Choledochojejunostomy	1	-
Esophageal cancer	Gastrostomy (COVID-19 positive)	None	-
	Gastrostomy	None	-
Thyroid cancer	Bilateral total thyroidectomy	None	-
Retroperitoneal mass	Excision + ureteroureterostomy	2	-
Hepatobiliary	Liver segmentectomy	3a	-

Table 2. Patients undergoing emergent surgery

Diagnosis	Surgical procedure performed	Morbidity (Clavien-Dindo	Mortality
Ileus rectal cancer	Transverse loop colostomy	2	-
Ileus rectal cancer	Transverse loop colostomy	2	-
Ileus hepatic flexure	Right hemicolectomy (suspected COVID-19)	5	Exitus
Ileus sigmoid colon	Sigmoid colectomy + Hartmann's colostomy	3a	-
Esophageal cancer	Gastrostomy (COVID-19 positive)	None	-

Table 3. Demographic data of confirmed and suspected SARS CoV-2 patients

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7
Age, years/Sex	55/F	65/M	63/M	72/M	71/M	79/M	74/M
Comorbidities	malnutrition	COPD	CVD	CVD	CHF, CVD	hepatitis b, CVD	no
Known history of contact	no	no	no	no	no	no	no
Preoperative chest imaging	PAAC +, THORACIC CT +	PAAC +, THORACIC CT +	PAAC +, THORACIC CT +	PAAC +, THORACIC CT +	PAAC +, THORACIC CT +	PAAC +, THORACIC CT +	PAAC +, THORACIC CT +
Diagnoses	esophageal squamous cell carcinoma/ obstruction	prostate adenocarcinoma	ileus (rectal ca)	ileus (rectal ca)	ileus (transverse colon adenocarcinoma)	pancreatic adenocarcinoma	ascites, GIT malignancy
Surgery	gastrostomy	supraclavicular lymphadenectomy	transverse loop colostomy	transverse loop colostomy	right hemicolectomy	PTC	gastroscopy,colonoscopy
Fever peak	no fever	no fever	38.2	no fever	no fever	39.5	38
Cough	yes	yes	no	yes	no	yes	no
Shortness of breath	no	yes	no	yes	yes	yes	no
Lowest SpO2	93	85	90	92	75	80	93
White blood cells *10^3/µL (4.49 - 12.68)*	12.59 10^3/µL (4,49 - 12,68)	10.33 10^3/µL (4,49 - 12,68)	17.89 10^3/µL (4.49 - 12.68)	6.29 10^3/µL (4.49 - 1268)	10.7 10^3/µL (4,49 - 12,68)	10.58 10^3/µL (4,49 - 12,68)	6.3 10^3/µL (4,49 - 12,68)
Lymphocytes *10^3/µL (1.26 - 3.35)*	1.64 10^3/µL (1,26 - 3,35)	0.52 10^3/µL (1,26 - 3,35)	1.63 10^3/µL (1.26 - 3.35)	1.95 10^3/µL (1.26 - 3.35)	0.79 10^3/µL (1,26 - 3,35)	0.56 10^3/µL (1,26 - 3,35)	01.3 10^3/µL (1,26 - 3,35)
Aspartate transaminase (AST) *IU/L (0-32)*	35 IU/L (0-32)	64 IU/L (0-32)	9.4 IU/L (0-32)	29 IU/L (0-32)	36 IU/L (0-32)	40 IU/L (0-32)	69 IU/L (0-32)
Alanine aminotransferase(ALT) *U/L (0-33)*	31 U/L (0-33)	27 U/L (0-33)	6 U/L (0-33)	11 U/L (0-33)	53 U/L (0-33)	41 U/L (0-33)	36 U/L (0-33)
CRP *mg/L (0-5)*	61.9 mg/L (0 - 5)	66.9 mg/L (0 - 5)	268.8 mg/L (0 - 5)	56.4 mg/L (0 - 5)	105.4 mg/L (0 - 5)	22 mg/L (0 - 5)	23.2 mg/L (0 - 5)
ESR *mm/h (0-20)*	78 mm/h (0 - 20)	89 mm/h (0 - 20)	43 mm/h (0 - 20)	42 mm/h (0 - 20)	52 mm/h (0 - 20)	36 mm/h (0 - 20)	12 mm/h (0 - 20)
D-dimer *ug FEU/ml (0-0.5)*	1.36 ug FEU/ml (0 - 0,5)	3.65 ug FEU/ml (0 - 0.5)	4.25 ug FEU/ml (0 - 0.5)	0.59 ug FEU/ml (0 - 0.5)	7.5 ug FEU/ml (0 - 0,5)	4.22 ug FEU/ml (0 - 0,5)	1.2 ug FEU/ml (0 - 0,5)
Procalcitonin *µg/L (<0.5)*	0.03 µg/L (<0.5)	0.1 µg/L (<0.5)	0.26 µg/L (<0.5)	0.1 µg/L (<0.5)	0.1 µg/L (<0.5)	0.83 µg/L (<0.5)	0.2 µg/L (<0.5)
SARS-CoV-2	positive	negative	negative	negative	negative	negative	negative
Blood culture for bacteria	negative	negative	negative	negative	negative	negative	negative
Treatment	HCQ 2X400 MG PO initial dose, 2X200 MG PO maintenance dose + AZM 1X500 MG PO initial dose, 1X250 MG PO maintenance dose + OST 2X75 MG PO 5 days	HCQ 2X400 MG PO initial dose, 2X200 MG PO maintenance dose + AZM 1X500 MG PO initial dose, 1X250 MG PO maintenance dose + OST 2X75 MG PO 5 days	HCQ 2X400 MG PO initial dose, 2X200 MG PO maintenance dose + AZM 1X500 MG PO initial dose, 1X250 MG PO maintenance dose + 5 days	HCQ 2X400 MG PO initial dose, 2X200 MG PO maintenance dose + AZM 1X500 MG PO initial dose, 1X250 MG PO maintenance dose + 5 days	HCQ 2X400 MG PO initial dose, 2X200 MG PO maintenance dose + AZM 1X500 MG PO initial dose, 1X250 MG PO maintenance dose + OST 2X75 MG PO 5 days	HCQ 2X400 MG PO initial dose, 2X200 MG PO maintenance dose + AZM 1X500 MG PO initial dose, 1X250 MG PO maintenance dose + OST 2X75 MG PO 5 days, MEM 3x1 GR IV	HCQ 2X400 MG PO initial dose, 2X200 MG PO maintenance dose + AZM 1X500 MG PO initial dose, 1X250 MG PO maintenance dose + OST 2X75 MG PO 5 days
Length of hospital stay	25	16 days	21 days	12 days	ex on day 3	ex on day 20	3 days
Survival	yes	yes	yes	yes	no	no	yes

Abbreviations: COPD, Chronic obstructive pulmonary disease; CVD, cardiovascular disease; CHF, congestive heart failure; GIT, gastrointestinal tract; PTC, percutaneous transhepatic cholangiography; ALT, alanine aminotransferase; AST, aspartate aminotransferase; CRP, C-reactive protein; CT, computed tomography; ESR, erythrocyte sedimentation rate; NA, Not applicable; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; SpO2, peripheral oxygen saturation; ICU, intensive care unit; PO, per oral; IV, intravenous; HCQ, Hydroxychloroquine; AZM, Azithromycine; OST, Oseltamivir; MEM, Meropenem

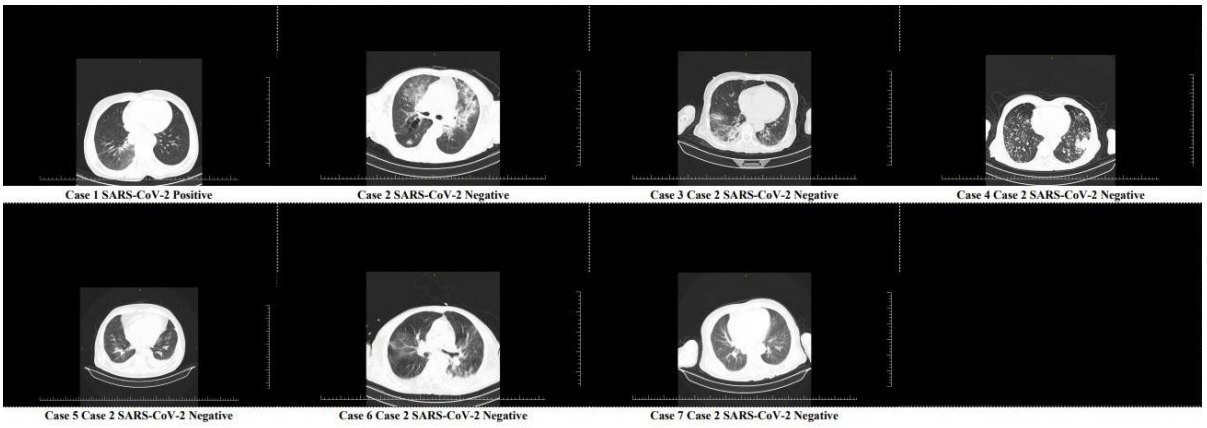


Figure 1. Thoracic computerized tomographic images of cases



Figure 2. Locoregional anesthesia and personal protective equipment(left) and operating room and personal protective equipment

DISCUSSION

COVID-19 infection affected the entire world and the number of confirmed cases reached to 3,726,292 as of May 8, 2020 and resulted in 257,405 deaths (1). An average of 80,000 new cases are detected every day. In Turkey, 133,721 cases were detected between March 11 and May 8, and 3641 cases died due to COVID-19. Everyday 1900-2000 new cases are diagnosed, even though the daily number of new cases has been decreasing as a result of precautions such as isolation practices, curfew for individuals at risk, use of masks and social distancing (2).

The cancer incidence in Turkey has been determined as 225.1 in 100,000 according to the 2018 GLOBOCAN data (5). There is an inarguably high number of new cancer cases and patients under follow-up by oncology clinics, who had progressed to surgical treatment during the pandemic of COVID-19. Survival of such cases is closely associated with surgery in line with oncological principles.

Guidelines have been provided for surgical interventions during the pandemic of COVID-19 in our country and in the world, including protective equipment for healthcare personnel (N95 respiratory mask, eye protection, full-face shield, moisture-barrier fluid-repellent gown, long boots and long fitted gloves), adequately-wide negative-pressure (under 5 Pa) operating rooms

designed for patients with infectious diseases to minimize contact during operations. Suspected cases were also operated as if they were infected with COVID-19 in order to prevent contact with body fluids and respiratory droplets of affected cases and smoke developing during the operation (6-9). In our clinic, COVID-19 positive one patient and COVID-19 suspected 6 patients were operated in the negative-pressure operating room. All of the staff working in the operating room used personal protective equipment (Figure 2).

Some guidelines have grouped oncological cases in terms of chemotherapy and surgical treatment methods, recommended the use of oral chemotherapeutic or hormonal treatments if appropriate for the disease, via tele-visits if possible and postponing the follow-up visits as long as possible as circumstances permit (10,11). The method of colorectal surgery recommended in guidelines is open surgery, or if laparoscopic method is to be performed, air leak through the abdomen should be prevented and ports should be pulled out of abdomen after aspiration of all air in the abdomen and the use of energy generating equipment should be minimized (12). We also expanded our indication in terms of neoadjuvant therapy in appropriate stomach, rectum and breast cancer cases by following the guidelines. However, while choosing the surgical technique of the patients we operated on, we did not choose open surgery for all patients. We preferred laparoscopic surgery in appropriate patients by applying the protective measures recommended by the pandemic guidelines.

Regional anesthesia is recommended for anesthesia during the COVID-19 pandemic in order to protect both healthcare personnel and patients since it is safer. (13). Epidural anesthesia was administered to patients, who were not contraindicated for regional anesthesia, in sitting position by an anesthesiologist wearing personal protective equipment (Figure 2).

CONCLUSION

We are setting sail in dark waters with minimal data and little past experience to base the decisions on. Assessments to be performed in the future after the pandemic will demonstrate probably ineffective or unnecessary actions or missed opportunities. COVID-19 pneumonia infection was not observed after surgery in the one-month period, after the good isolation of the patients and the applications performed by considering the guidelines. It is important to know how surgical clinics are affected by COVID-19 in terms of lessons to be taken retrospectively, patient management in future outbreaks like COVID-19, protection of public health, and precautions to be taken in surgery clinics.

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