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Analysis of the Gynecologic Cancer Surgery with Pre-pandemic Protocols in a COVID-19 Free Cancer Center

COVID-19 Hasta İçermeyen Bir Kanser Merkezinde Pandemi Öncesi Protokollerle İnekolojik Kanser Cerrahisinin Analizi

FUNDA ATALAY¹ZEHRA ÖZTÜRK BAŞARIR² Orcid ID: 0000-0001-8219-116X Orcid ID: 0000-0001-6939-0666¹ Ankara Dr Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital, Gynecological oncology surgery, Ankara, Turkey² University of Health Sciences, Ankara City Hospital, Gynecology and Obstetrics Hospital, Gynecologic Oncology Department, Ankara, Turkey

ABSTRACT

Objective: COVID-19 has caused a rapid transformation in the healthcare system, including in particular, the care of vulnerable cancer patients. The aim of this study was to present our clinical experience in gynecological cancer surgeries in a COVID-19-free cancer hospital during the pandemic.

Materials and Methods: A retrospective analysis was made of the data of patients with ovarian, endometrium, cervix and vulva cancers who were treated with surgery between March 2020 and March 2021, with particular focus on the complication rates on day 30, and at the end of one year.

Results: The study included a total of 74 patients with mean age of 59 years. The most common diagnosis was ovarian cancer (48.6%) followed by endometrial (43.2%), cervical (6.8%) and vulvar cancer (1.4%). Most of the patients were in advanced stage (FIGO 3 and 4) of ovarian (86%), endometrial (59.4%) and cervical local advanced (60%) cancer. The complication rate was 17.6 %. Surgery was delayed in one patient with a preoperative positive polymerase chain reaction (PCR) test for COVID-19 infection, and none of the patients had a positive test result in the early postoperative period.

Conclusion: COVID-19-free institutions for cancer surgery, is an effective treatment strategy in the context of the pandemic. The results of this study indicate that continuity of cancer treatment can be achieved safely, with strict adherence to COVID-19 precautions for both patients and healthcare workers.

Keywords: COVID-19, gynecological cancer, surgery, treatment

ÖZ

Amaç: COVID-19, özellikle savunmasız kanser hastalarının bakımı dahil olmak üzere sağlık sisteminde hızlı bir dönüşüme neden olmuştur. Bu çalışmanın amacı, pandemi döneminde COVID-19'dan arınmış bir kanser hastanesinde jinekolojik kanser ameliyatlarındaki klinik deneyimimizi sunmaktır.

Gereç ve Yöntemler: Mart 2020-Mart 2021 tarihleri arasında cerrahi tedavi uygulanan over, endometrium, serviks ve vulva kanserli hastaların verilerinin özellikle 30. gün ve 1. günün sonundaki komplikasyon oranlarına odaklanılarak retrospektif analizi yapıldı.

Bulgular: Çalışmaya yaş ortalaması 59 olan toplam 74 hasta dahil edildi. En sık tanı yumurtalık kanseri (%48,6) idi, bunu endometrial (%43,2), servikal (%6,8) ve vulvar kanser (%1,4) izledi. Hastaların çoğu ileri evrede (FIGO 3 ve 4) over (%86), endometrial (%59,4) ve serviks lokal ileri (%60) kanseriydi. Komplikasyon oranı %17.6 idi. Ameliyat öncesi COVID-19 enfeksiyonu için polimeraz zincir reaksiyonu (PCR) testi pozitif olan bir hastada ameliyat ertelendi ve ameliyat sonrası erken dönemde hastaların hiçbirinde pozitif test sonucu çıkmadı.

Sonuç: Kanser cerrahisi için COVID-19'dan arınmış kurumlar, pandemi bağlamında etkili bir tedavi stratejisidir. Bu çalışmanın sonuçları, hem hastalar hem de sağlık çalışanları için COVID-19 önlemlerine sıkı bir şekilde uyulması ile kanser tedavisinin sürekliliğinin güvenli bir şekilde sağlanabileceğini göstermektedir.

Anahtar Kelimeler: COVID-19, jinekolojik kanser, cerrahi, tedavi

Sorumlu Yazar/ Corresponding Author: Zehra Öztürk Başarır

Adres: University of Health Sciences, Ankara City Hospital, Gynecology and Obstetrics Hospital, Gynecologic Oncology Department

E-mail: zehraozturk78@yahoo.com

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INTRODUCTION

The COVID-19 pandemic has had an unprecedented impact on healthcare worldwide causing enormous strain on healthcare services globally (1,2,3). Cancer patients are the most vulnerable patient group because of their urgent need for complex treatment and their suppressed immune system.

In the field of gynecological oncology, COVID-19 affects patient health directly with increased risk of infection and indirectly by decreasing hospital capacity for cancer treatment (4,5). All major societies, including gynecological oncology associations, made new recommendations for treatment protocols focusing on: 'less surgery, fewer hospital visits and more protective measures against the spread of COVID-19' (6,7). In this context, planned gynecological cancer surgeries were postponed or cancelled in many hospitals and medical centers, as they could not provide optimal conditions for patients and staff (8).

In this new environment, our hospital, which is a comprehensive cancer centre, was defined as a COVID-19-free hospital and was established as a reference centre for other institutions regarding priority oncological surgeries by the regional healthcare authorities. In these COVID-19-free hospitals, no COVID-19-positive patients were hospitalized and only cancer patients with a negative test result were allowed to have inpatient care. One visitor with a negative test result was permitted, and stayed in isolation in the hospital. Thus cancer surgeries have continued in our hospital since the beginning of the pandemic, with maximum attention paid to the medical safety of both patients and employees.

The primary outcome of this study was to evaluate the results, complications and reliability of gynecological cancer surgery performed during the pandemic period compared with the established complication rate of gynecological cancer surgery. The secondary endpoint was to evaluate the safety of the COVID-19-free cancer hospital policy on the surgical management of gynecological cancers during the pandemic.

MATERIALS AND METHODS

Approval for the study was granted by the Ethics Committee of the Institutional Review Board of Local Hospitals, and the Ministry of Health Scientific Research Platform. Our center was declared a COVID-19-free hospital in the pandemic and focused only on cancer treatment. It became a reference center for regional hospitals and medical centers regarding priority oncological surgeries by the healthcare authorities.

The data of the patients who were operated on with the diagnosis of gynecological cancer at our center between March 2020 and March 2021 were retrospectively examined from a scan of the patient files. Patients with a diagnosis of gynecological cancer (ovarian cancer, cervical cancer, endometrial cancer, ovarian borderline tumor and vulvar cancer) for whom surgery was performed during the study period were included. Exclusion criteria were defined as patients with other types of gynecological cancer, such as breast cancer or trophoblastic tumor, and patients that did not have a surgical treatment plan for management of their cancer.

A gynecology oncologist evaluated all the patients. Radiological examinations such as ultrasound, magnetic resonance imaging, or computed tomography (CT) scans were requested if needed. All patients were required to have a preoperative routine blood analysis and a chest X-ray. Neoadjuvant chemotherapy was planned only for ovarian cancers according to Leuven selection criteria (9).

In the early stages of the pandemic, a COVID-19 PCR test and / or thorax CT were requested for patients with clinically suspected COVID-19 or a history of close contact with a confirmed case in the preoperative period. The COVID-19 PCR test was routinely applied 48 hours before the operation, according to the guidelines published by the health authorities in December 2020. There was no routine test for asymptomatic healthcare workers. According to the decision of the infectious diseases committee of the hospital, surgery for COVID-19-positive patients was delayed for one month and performed after a negative test result. The first vaccinations for COVID-19 were performed in January 2021 and began with healthcare personnel. None of the patients were vaccinated during the study period. Only the healthcare workers of the hospital were vaccinated. For asymptomatic patients, routine COVID-19 testing was not applied after the surgery.

Clinical records, laboratory and imaging findings of the patients were obtained from the hospital patient records. Demographic characteristics of the patients, comorbidities, type of surgery performed, histopathological features of the tumor, stage of the disease, early and late complications, duration of hospitalization, adjuvant therapy and COVID-19 status were recorded. Complications were evaluated according to the Clavien Dindo criteria (10).

Basic descriptive statistics were used to describe the results. Data were stated as frequency and percentage and mean±standard deviation (SD) values as appropriate. Statistical analyses were performed using SPSS vn. 22.0 software (Statistical Program for the Social Sciences).

RESULTS

The study included a total of 74 patients with a mean age of 58 years (range, 16–85 years). Patients were referred with ovarian (36/74, 48.6%), endometrial (32/74, 43.2%), cervical (5/74, 6.8%), or vulvar cancer (1/74, 1.4%). The clinicopathological characteristics of patients who underwent surgery are listed in Table 1.

Table 1. Baseline characteristics

Age (years) (median (range))	59 (16-85)
Age <65 years (n (%))	47 (63.51)
Age ≥65 years (n (%))	27 (36.49)
Comorbidity (n(%))	
Hypertension	42 (56.7)
Extragynecological malignancy history	3 (4.1)
Diabetes	27 (36.4)
History of respiratory disease	5 (6.7)
Without disease	21 (28.4)
Disease type (n(%))	
Over cancer (n(%))	36 (48.6)
Endometrium cancer (n(%))	32 (43.2)
Cervical cancer (n(%))	5 (6.8)
Vulvar cancer (n(%))	1 (1.4)

The most commonly performed procedures were total abdominal hysterectomy together with bilateral salphingoophorectomy, bilateral pelvic and paraaortic lymph node dissection and omentectomy. The surgical operations are presented in Table 2.

Table 2. Surgical Treatment

		n	%
TAH+BSO+BPPLND+Omentectomy	Endometrium /Ovarian cancer	61	82%
USO+BPPLND+ Omentectomy	Ovarian cancer	2	3%
Secondary / Tertiary Cytoreduction	Recurrent ovarian cancer	2	3%
TAH+BSO+Omentectomy +Appendectomy +Hemicolectomy+Peritonectomy	Ovarian cancer	3	4%
Hemivulvectomy	Vulvar cancer	1	1%
Wertheim +BPPLND	Cervical cancer	5	7%

TAH (Total Abdominal Hysterectomy), USO (Unilateral Salphingoophorectomy), BSO (Bilateral Salphingoophorectomy), BPLND (Bilateral Pelvic, Paraaortic Lymph Node Dissection)

A total of nine ovarian and endometrium cancer patients received neoadjuvant chemotherapy and 57 patients received adjuvant chemotherapy. The adjuvant and neoadjuvant therapies are shown in Table 3.

Table 3. Neoadjuvant / Adjuvant Treatment

	n	%
Adjuvant treatment		
Endometrium cancer	23	72%
Over cancer	30	83%
Cervical Cancer	4	80%
Neoadjuvant treatment		
Endometrium cancer	1	3%
Over cancer	8	22%

The COVID-19 PCR test was routinely applied 48 hours before the operation in the second half of the study period due to increased availability of the test, according to the guidelines published by the health authorities in June 2021. The surgery of one patient with a positive preoperative COVID-19 PCR test result was postponed for one month. After one month and 2 negative tests performed 24 hours apart, the surgery was performed. Neither the COVID-19 symptoms nor the COVID-19 test were positive in this patient in the perioperative and postoperative period.

Postoperative complications were seen in 13 patients (13/74, 17.6%), of which 5 were Clavien–Dindo grade 1 or 2 (7/13, 53.8%), and 7 (6/13 46.2%) were grade 3 or 4 (Table 4).

Table 4. Complications

Complication	ClavienDindo Grade	n	%
Superficial infection	I	4	5.4%
Urinary infection	II	2	2.7%
Deep infection	III	3	4 %
Hypercalcemia	II	1	1.3%
Transient ischemic attack	IIIa	1	1.3%
Anastomotic leakage	IIIb	1	1.3%
Acute renal failure	IVa	1	1.3%

Total number

The grade 3 and 4 complications occurred in patients with advanced stage cancers who underwent extensive surgery. The length of hospital stay was mean 12 days (range, 6-51 days). In one patient who was re-operated on for anastomotic leakage, the length of hospital stay was 51 days, of which 14 days were in the intensive care unit. The surgical data of the patients are shown in Table 2.

None of the patients tested positive for COVID-19 with a PCR test in the early postoperative period (14 days), after discharge. There were five positive PCR tests for COVID-19 in the late period within two months.

DISCUSSION

In this study the setting of COVID-19-free institutions for the continuity of cancer surgery was evaluated from the perspective of complication rates and disease spread. Many hospitals had to delay surgical treatments during the pandemic (4,9,12). However, surgical cancer care poses genuine problems, because delayed diagnosis and treatment could worsen oncological outcomes (13,14). The COVID-19 outbreak had an impact on gynecological cancer surgeons, such as avoiding surgery in favor of radiotherapy or chemotherapy (15,16,17). In an Italian nationwide survey considering surgical decisions, it was seen that avoiding lymphadenectomy or sentinel lymph node mapping had occurred during this period (4).

Given its characteristics and focus on the treatment of cancer patients, the COVID-19-free cancer centers were designed to continue cancer care without a change in the treatment plan compared with the pre-COVID era. At the start of the study period, COVID-19 PCR testing was not systematically performed because of the low availability of tests at that time, as in many centers (18). However, it was routine in the second half of the study period. COVID-19 infection was detected in only one patient in that period, causing a delay of surgery for one month. None of the patients were diagnosed with COVID-19 during the early follow-up period of two weeks after discharge. However, there were eight positive PCR tests within two months after surgery indicating the importance of personal isolation and protection during the vulnerable period of cancer treatment. The low cancellation rate (1 out of 74 patients) and absence of COVID-19 during the early postoperative period indicates the success of the COVID-19-free cancer center policy from the perspective of disease control. Five patients were tested positive between 15 days and 2 months after surgery. In the early postoperative period, maximum care was taken in the hospital and at home in respect of disease spread. After that period, additional therapies, the need for follow-up visits, and decreased attention to personal protection could have influenced the risk of transmission and subsequent infection.

Major surgery is the principal treatment modality especially in ovarian cancer, which has the highest mortality rate within this group (18,19). Most of the affected women were diagnosed at an advanced stage because early stage disease is usually asymptomatic and symptoms of late-stage disease are non-specific. Advanced stage diseases require more extensive surgery and frequent adjuvant treatment. Surgical treatment and adjuvant modalities, such as chemotherapy and radiotherapy cause immune suppression, which may affect complication rates (20). Pandemics may potentially further delay the diagnosis

because of accessibility to outpatient screening.

De Santiago et al. reported the results of 126 patients treated in a partial COVID-19-free hospital and reported an 11% complication rate (18). That study included 60% breast cancer patients and less than 5% of the series were advanced stage ovarian cancer. The Society of Gynecological Oncology has suggested use of the Elective Surgery Acuity Scale (ESAS) for planning and most cases of gynecological cancer fall into tier 3a/b, for which the recommended action is not to delay surgery (7). As seen from the current study results, 74 gynecological cancer surgeries were safely managed during the pandemic, including advanced stage patients and complicated surgeries, avoiding delays or cancellations. The complication rate of 17.6% may seem to be excessive but most of the patients in this series were advanced stage (FIGO Stage 3 and 4) ovarian (86%); endometrial (59.4%) and cervical (60%) cancer. The vast majority of the Clavien–Dindo grade 3 and 4 complications were secondary to major surgery such as hemicolectomy and Wertheim in patients with advanced stage ovarian and cervical cancer (10). Three intrabdominal infections were conservatively treated with parenteral antibiotic treatment. A previous multicenter study including nearly 3000 major gynecological oncology operations reported a 30% complication rate within this group, with the highest complication rate observed in ovarian cancer patients (21). The current study showed that the postsurgical complications were similar both in percentage and clinical prognosis when compared with several centers in the pre-COVID-19 period.

During pandemics, small discrepancies within the many steps of cancer care beginning from admission, postoperative follow-up, to complex surgical operations and intensive care may adversely affect the overall outcome and risk of infection (22,23). The current study, conducted in a COVID-19-free hospital, demonstrated that gynecological cancer surgery, can be performed safely without changing the treatment approach. A COVID-19-free path in referral hospitals for cancer treatment helped both cancer patients and healthcare workers to achieve similar outcomes compared with the pre-COVID era. As surgeries gradually increase again in the post-pandemic period, it should be a priority to use hospital resources in a fair and responsible manner for cancer patients.

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