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Cancer patients affected by COVID-19: Experience from Milan, Lombardy

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HIGHLIGHTS

• There are growing concerns on the impact of COVID-19 in cancer patients.
• COVID-19 is impacting oncologic practice directly and indirectly.
• Prioritizing patients’ journey during COVID-19 is of paramount importance.

ARTICLE INFO

Objective. SARS-CoV-2 pandemic is continuing to spread. There are growing concerns on the impact of COVID-19 in cancer patients. Several papers reporting recommendations and guidelines are published. But few data on cancer patients affected by COVID-19 are available.

Methods. This is a retrospective study including all consecutive patients affected by gynecological cancer who developed COVID-19. All patients were treated in an academic setting (in Milan, Lombardy, Italy) between February and March 2020.

Results. Overall, 355 patients had active treatment during the study period due to newly diagnosed or recurrent gynecological disease. Among those, 19 (5.3%) patients affected by COVID-19. All patients were asymptomatic at the time of COVID-19 detection. Six patients were diagnosed before starting planned treatments; while the remaining 13 were diagnosed after their started their treatments. Considering the first group of six patients, one patient died due to COVID-19 3 days after the diagnosis; while the other patients recovered from COVID-19 after a median of three weeks. The latter group of 13 patients (treatments started) included five patients who underwent surgery and eight patients who underwent chemotherapy. Focusing on five patients who were diagnosed after surgery, we observed that two patients died during postoperative course, while in other two cases prolonged hospitalization was needed. One patient had no issues. Chemotherapy was delayed for the remaining patients without sequelae.

Conclusions. Our report highlights that COVID-19 impacts the quality of treatments for cancer patients. Mortality rate is high, especially after surgery. More important, patients under active treatment for cancer are at high risk of developing severe evolution of COVID-19. Prioritizing patients’ journey during COVID-19 is of paramount importance.

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1. Introduction

COVID-19 spreads to Europe and US in early 2020 [1]. COVID-19 is an emerging and rapidly evolving situation. Based on currently available evidence, older adults and individuals who have serious underlying medical conditions might be at high risk for severe illness from COVID-19. Cancer is a serious underlying medical condition, and it promotes the risk of developing severe and life-threatening complications [1]. Although literature is full of expert opinions addressing the potential impact of COVID-19 on oncologic practice [2], only few data on the impact of COVID-19 on patients affected by cancer are still available [3–6].

Recently, Liang et al., published a case series of 18 patients with history of cancer [3]. But only four (22.2%) patients received chemotherapy or surgery within the previous month; while, other patients were cancer survivors in routine follow-up after primary resection (n = 12) [3]. Similarly, Yu et al., reported outcomes of 12 cancer patients affected by cancer and COVID-19 [4]. Only five (41%) were under active treatments. The study included just a female patient having adjuvant radiotherapy for breast cancer [4]. Due to the paucity of data, it is not possible to weight the real impact of COVID-19 on patients (especially female patients) having active tumors of having treatment for cancer.
Characteristics of patients diagnosed for COVID-19 before starting planned treatments.

Table 1

| Patient | Age (years) | Disease | Significant comorbidities | Treatments planned | Symptoms related to COVID-19 | CT scan suggestive for pneumonia | Consequence of COVID-19 | Outcomes |
|---------|-------------|---------|---------------------------|--------------------|-----------------------------|----------------------------------|--------------------------|----------|
| 1       | 84          | Suspected ovarian cancer | Cardiovascular disease | Diagnostic laparoscopy | None at the time of diagnosis, but the patients developed respiratory symptoms 2 days after COVID-19 diagnosis | Yes | Treatment aborted | Died to COVID-19 |
| 2       | 67          | High grade serous ovarian cancer | None | Interval debulking surgery | Surgery | None | Yes | Surgical plan changed | Recovered |
| 3       | 62          | Endometrial cancer | None | Surgical plus chemotherapy | Surgery | None | Yes | Delayed surgical treatment | Recovered |
| 4       | 82          | Isolated inguinal ovarian cancer recurrence | Chronic kidney disease | Surgery | None | Yes | Delayed surgical treatment | Recovered |
| 5       | 65          | Suspected ovarian cancer | None | Surgery | None | Yes | Changing in surgical plan (neoadjuvant chemotherapy followed by interval debulking surgery) | Recovered |
| 6       | 62          | Ovarian cancer | None | Surgery | None | Yes | Avoided surgical treatment | Recovered |

Data are reported as median (range) or number (%). Abbreviation: yrs, years; ECOG, Eastern Cooperative Oncology Group; PS, performance status; COVID-19, Coronavirus disease 19; CT, computed tomography; ICU, intensive care unit.

3. Results

Overall, 355 single patients had active treatment during the study period due to newly diagnosed or recurrent gynecological cancers. Active treatments included surgery, chemotherapy and maintenance therapy. Outpatient visits were excluded since those patients were not tested for COVID-19 using specific triage methods, but only using clinical and anamnestic data. The aim of the present paper is to evaluate the impact of COVID-19 on patients affected by gynecological cancers. We aim to evaluate the prevalence of treatments’ delay and to assess morbidity and mortality rates. Delay of treatments is calculated from the date in which treatment was planned to the effective date in which treatments were administered/started. Basic descriptive statistics are used to describe our study population.
Table 3
Characteristics of patients diagnosed for COVID-19 after they started planned treatments.

| Patient | Age, years | Disease | Significant comorbidities | Treatments | Symptoms related to COVID-19* | CT scan suggestive for pneumonia* | Consequence of COVID-19 infection | Outcomes |
|---------|------------|---------|---------------------------|------------|-------------------------------|-----------------------------------|-----------------------------------|----------|
| 1       | 72         | Recurrent ovarian carcinoma | Cardiovascular disease | Palliative surgery | Fever, cough, and dyspnea developed 3 days after surgery | Yes (after surgery) | ICU admission | Died due to COVID-19 |
| 2       | 71         | Ovarian cancer | Cardiovascular disease | Interval debulking surgery | Fever, dyspnea developed 7 days after surgery | Yes (after surgery) | ICU admission | Died due to COVID-19 |
| 3       | 60         | Recurrent endometrial cancer (trocarsite metastasis) | None | Surgery | Fever, developed 3 days after surgery | Yes (after surgery) | Prolonged hospitalization need; delayed medical treatment | Recovered |
| 4       | 61         | Ovarian cancer | Cardiovascular disease | Interval debulking surgery | Fever, developed 5 days after surgery | Yes (after surgery) | Delayed medical treatment | Recovered |
| 5       | 76         | Ovarian cancer | Hypothyroidism | Chemotherapy | None | Not done | Prolonged hospitalization need; delayed medical treatment | Recovered |
| 6       | 68         | Ovarian cancer | None | Chemotherapy | None | Yes (after chemotherapy) | Delayed medical treatment | Recovered |
| 7       | 66         | Recurrent platinum-resistant ovarian cancer | None | Chemotherapy | None | Yes (after chemotherapy) | Stopped medical treatment | Recovered |
| 8       | 58         | Ovarian and endometrial cancer | None | Bevacizumab maintenance | None | Yes (after chemotherapy) | Stopped medical treatment | Recovered |
| 9       | 63         | Ovarian cancer | None | Bevacizumab maintenance | None | Yes (after chemotherapy) | Stopped medical treatment | Recovered |
| 10      | 56         | Endometrial cancer | None | First line chemotherapy | Fever, developed 1 day after chemotherapy | Yes (after chemotherapy) | Delayed medical treatment | Recovered |
| 11      | 59         | Ovarian cancer | Hypothyroidism | Bevacizumab maintenance | Fever, developed 7 days after chemotherapy | Yes (after chemotherapy) | Delayed medical treatment | Recovered |
| 12      | 49         | Recurrent cervical cancer | Plummer disease | Chemotherapy | None | Yes (after chemotherapy) | Delayed medical treatment | Recovered |
| 13      | 65         | Ovarian cancer | Cardiovascular disease | Chemotherapy | None | Yes (after chemotherapy) | Delayed medical treatment | Recovered |

* All patients had no symptoms nor suspected alteration at preoperative CT scan.

patients. The other group of 13 patients (treatments started) included five patients who underwent surgery and eight patients who underwent chemotherapy. Table 3 shows the characteristic of those patients. Treatments were started after the patients were considered negative for COVID-19 (they had had negative clinical evaluation, negative CT scan and negative swabs before starting the treatments). Focusing on five patients who were diagnosed after surgery, we observed that two patients died during postoperative course, while in other two cases prolonged hospitalization was needed. One patient had no issues, related to surgery. Chemotherapy was delayed (n = 5) or stopped (n = 3) for the remaining patients without sequelae.

4. Discussion

The present study report a case series of patients affected by both gynecological cancer and COVID-19. Although the number as small to draw conclusion on the effects of COVID-19 on cancer patients, this is one of the larger experiences investigating this issue. Only few case reports and small case series are still available. We think that those data are important since they highlight the impact of COVID-19 on patients with cancer. Mortality rate is extremely high (13.5%). Treatments should be delayed and triage methods are necessary to reduce the risk of in-hospital spread of SARS-CoV-2. Moreover, treatments plan (including delayed treatments) changed in almost all patients diagnosed with COVID-19, thus potentially impacting in our ability to treat cancers. We point out that also medical and surgical staffs need protection to reduce possible contamination [7,8].

Interestingly, a recent published paper reports evaluated the impact of COVID-19 in a series of 218 patients with cancer and COVID-19 infection who were treated in Montefiore Health system, New York from March 18th to April 8th 2020. These patients included 164 (75%) patients with solid tumors and 54 (25%) with hematologic malignancies. A total of 61 (28%) cancer patients died from COVID-19 with a case fatality rate (CFR) of 37% (20/54) for hematologic malignancies and 25% (41/164) for solid malignancies [6]. These results corroborated our findings. The inherent biases of the retrospective study design represent the main weaknesses of the present investigation. Additionally we have to point out that there are likely undiagnosed COVID patients in population which would lower the mortality reported in our report.

Our report highlights that COVID-19 impact the quality of treatments for cancer patients. Mortality rate is high, especially after surgery. More important, patients under active treatment for cancer are at high risk of developing severe evolution of COVID-19. Prioritizing patients journey during COVID-19 is of paramount importance.

CRediT authorship contribution statement

Giorgio Bogani: Conceptualization, Methodology, Writing - original draft, Writing - review & editing. Antonino Ditto: Methodology, Writing - original draft, Writing - review & editing. Sara Bosio: Methodology, Writing - original draft, Writing - review & editing. Claudia Brusadelli: Methodology, Writing - original draft, Writing - review & editing. Francesco Raspagliesi: Conceptualization, Methodology, Project administration, Supervision, Writing - original draft, Writing - review & editing.

Declaration of competing interest

The authors declare no conflicts of interest. No funding sources supported this investigation.
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