Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

European Journal of Cancer 133 (2020) 29–32

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.ejcancer.com

Current Perspective

Cancer treatment during the coronavirus disease 2019 pandemic: Do not postpone, do it!

Claudia Omarini [a,*], Michela Maur [a], Gabriele Luppi [a], Franco Narni [b], Mario Luppi [b], Massimo Dominici [c], Giuseppe Longo [a], Federico Piacentini [c]

[a] *Division of Oncology, University Hospital of Modena, Italy*
[b] *Department of Medical and Surgical Sciences for Children and Adults, Division of Haematology and Hemopoietic Stem Cell Transplant Program, University Hospital of Modena, Italy*
[c] *Department of Medical and Surgical Sciences for Children and Adults, Division of Oncology, University Hospital of Modena, Italy*

Received 20 April 2020; accepted 24 April 2020
Available online 12 May 2020

KEYWORDS
SARS-CoV-2;
COVID-19;
Cancer care;
Pandemic;
Practical health vigilance recommendations

Abstract At the end of January 2020, a novel betacoronavirus, known as severe acute respiratory syndrome coronavirus 2, progressively spread in Italy. Patients with cancer are considered more prone to infections because of the immunosuppressive status due to both malignancy and anticancer treatments. From the first Italian government restrictions (23rd February), Modena Cancer Center adopted practical health vigilance recommendations to minimise the risk of exposure to the virus without overlooking cancer management. From 23rd February to 31st March 2020, 1257 patients on active anticancer treatment for oncological or haematological malignancies attended our institution. All the staff activities were rescheduled following our practical coronavirus disease 2019 (COVID-19) guideline. During this period, we have tallied 9 cases of COVID-19 infection (0.71%) in patients with cancer and 3 cases (1.66%) in health workers. The mortality rate of our patients with cancer was 22%, consistent with the data reported in the literature. In conclusion, following our practical health vigilance recommendations, physicians should be confident in maintaining life-saving anticancer treatment without exceedingly increasing the risk of nosocomial COVID-19 infection. The high rate of mortality suggested that all patients on active anticancer treatment with flu-like symptoms have to be carefully screened for COVID-19 infection.

* *Corresponding author*: Division of Medical Oncology, University Hospital of Modena, Via del Pozzo 71, 41122 Modena, Italy.
E-mail address: claudia.omarini@gmail.com (C. Omarini).

https://doi.org/10.1016/j.ejca.2020.04.034
0959-8049/

At the end of January 2020, a novel betacoronavirus known as severe acute respiratory syndrome coronavirus 2 progressively spread in Italy. Outside China, Italy was the most affected by the coronavirus disease 2019 (COVID-19) outbreak, with 105792 confirmed cases and 12428 deaths, as of 31st March 2020 [1]. Emilia-Romagna is the second most involved region in Italy, with overall 14074 cases registered at the end of March 2020 in Modena. To limit viral spread, the Italian government implemented extraordinary measures from 23rd February to 9th March, culminating with the lockdown of all social and work activities unless strictly required.

Patients with cancer are considered more prone to infections because of the immunosuppressive status due to both malignancy and anticancer treatments [2]. A national analysis performed in China showed that patients with cancer have five times higher risk of COVID-19 infection as well as a higher risk of severe events and greater need for intensive care assistance than patients without cancer [3]. For these reasons, the authors proposed three major strategies: postpone adjuvant therapies and elective surgery, use stronger personal protection provisions for patients with cancer/survivors and consider intensive surveillance in infected patients [3]. In addition, a retrospective cohort study published by Zhang et al [4] identified that anticancer therapies within 14 days from infection was an independent predictor of death or other severe events, with a hazard ratio higher than 4. Actually, the issue on how to manage cancer care during the COVID-19 pandemic is crucial.

From the first Italian government restrictions (23rd February 2020), Modena Cancer Center adopted practical health vigilance recommendations to minimise the risk of exposure to the virus without overlooking cancer management. Of note, we halted everything for a few days to analyse the situation and develop the following plan.

Patient care
- Provide surgical face masks and access to cleaning/disinfecting agents for all people having access to the clinic.
- Contact the patient on active anticancer treatment the day before the appointment for screening of symptoms of cough, sore throat, fever or other flu-like symptoms. Patient with symptoms must be rescheduled.
- Allow access to visitors only if essential to visit.
- Prohibit visitors' access to the haemopoietic stem cell transplantation unit and to the inpatient haematology ward.
- Increase interval between visits to reduced waiting time.
- Postpone routine follow-up visits for patients not on active cancer treatment (e.g. 6- to 12-month survivorship visits), and conduct appointments via telemedicine.
- Respect lifestyle restrictions.

Facility reorganisation
- Limit access to the hospital through one point of entry.
- Establish triage stations outside the hospital to screen patients and visitors for COVID-19 symptoms.
- Convert the waiting area to allow for distancing of at least 1 m.
- Dedicate a confined hospital area for patients with respiratory symptoms who present to the oncological/haematological admission room (e.g. COVID-19 room).

Staff
- Provide personal protective equipment (PPE) (e.g. surgical face mask) and access to cleaning/disinfecting agents for all the staff members.
- Train clinic staff for symptom recognition, screening procedures and PPE use.
- Reduce the number of non-medical staff in the clinic by allowing work from home for phone-based activities.
- Organise Web-based multidisciplinary team meetings.
- Respect lifestyle restrictions.

From 23rd February to 31st March 2020, 1257 patients on active anticancer treatment attended our institution, 93% of whom were on an outpatient setting. All staff activities were rescheduled following our practical COVID-19 guideline. During this period, only 9 patients were diagnosed as having symptomatic COVID-19 infection corresponding to 0.71% of patients on active anticancer drugs treated in our hospital. All of them received their anticancer treatments as outpatients. Patient characteristics and clinical outcomes of COVID-19 infections are summarised in Table 1. In particular, 5 patients had haematological malignancy, while 4 had an active solid tumour. The median age was 74 years (range = 65–86 years), and all had co-morbidities other than cancer. Considering time from the last visit/treatment and the onset of COVID-19 symptoms, in two-thirds of patients, a nosocomial transmission could not be excluded. All but one required hospitalisation owing to rapid deteriorating conditions. Two of them (22%) died owing to COVID-19 infection, both with gastrointestinal solid tumour.

Evidence from our experience suggested that the practical health recommendations adopted in our hospital significantly decrease the risk of nosocomial COVID-19 infection in patients with cancer under active treatment. In our opinion, cancer care cannot be postponed only on the basis of the risk of COVID-19 infection. Physicians should take into account the patient's age and clinical needs, co-morbidities and life expectancy when choosing a cancer treatment even during the COVID-19 pandemic. Of note, our study population also included patients on immunosuppressive treatment for haematological malignancies, who are well known to have a more profound immunosuppressive status than those with solid tumour, reinforcing the value and positive impact of our recommendations. The beneficial

Table 1
Characteristics and clinical outcome of COVID-19–infected patients.

	Gender	Age	Type of cancer	Co-morbidities	Anticancer treatment	Time from thelast visit to the onset of COVID-19 symptoms, days	Symptoms	Complications	Outcome[a]
Patient 1	F	69	Urothelial carcinoma (stage IV)	Hypertension	Anti-TIGIT[b] – pembrolizumab	7	Cough, fever	Pneumonia	Hospitalisation
Patient 2	M	73	Acute promyelocytic leukaemia	Gallbladder cancer (stage IV), atrial fibrillation, hypertension	Retinoic acid	8	Fever	Pneumonia	Hospitalisation
Patient 3	F	65	Pancreatic cancer (stage III)	Chronic liver disease	Folfirinox[c]	7	Dyspnoea, fever	ARDS	Death
Patient 4	F	75	Salivary gland cancer (stage IVB)	Breast cancer	Radiotherapy	Not applicable[d]	Flu-like symptoms	None	Home self-isolation
Patient 5	F	86	Chronic lymphatic leukaemia	Chronic liver disease, hypertension	Ibrutinib	33	Cough, fever	Pneumonia	Hospitalisation
Patient 6	M	76	Mantle cell lymphoma	Prostate cancer, cardiovascular disease	Ibrutinib	21	Cough, fever	ARDS	Discharge from the hospital
Patient 7	M	72	Chronic lymphatic leukaemia	Hypertension, obesity	Bendamustine-rituximab	10	Fever	None	Discharge from the hospital
Patient 8	M	73	Follicular lymphoma	Cardiovascular disease	Rituximab	17	Fever	Pneumonia	Hospitalisation
Patient 9	M	75	Colorectal cancer	Cardiovascular disease	Capecitabine-bevacizumab	14	Fever, mental confusion	ARDS	Death

COVID-19 = coronavirus disease 2019; TIGIT = T-cell immunoreceptor with immunoglobulin and ITIM domains; ARDS = acute respiratory distress syndrome.
[a] At the time of manuscript submission.
[b] Immune checkpoint inhibitors.
[c] Fluorouracil, irinotecan and oxaliplatin.
[d] The patient was on radiotherapy started 23 days before.

effects of the extensive use of surgical masks by patients and staff members have recently and formally been demonstrated too [5]. Moreover, our strict restrictions have kept workers safe and have limited the spread of COVID-19 infection among healthcare personnel too. In particular, we have tallied only 3 cases of COVID-19 infection in health workers, corresponding to 1.66% of the Modena Cancer Center medical staff.

Despite the small number of infected patients, the rate of mortality was higher than that of the population without cancer of the same age (22% in our study population *vs* 8.0% in patients without cancer aged 70–79 years and 14.8% in those aged ≥80 years) [6]. The mortality rate of our patients, as well as the incidence of severe events, is consistent with the data reported in the literature (22% vs 28%) [7]. All but one of our patients developed serious complications that required hospitalisation. For that reason, we are concordant to carefully screen for COVID-19 infection in all patients on active anticancer treatment with flu-like symptoms.

Therefore, we propose to apply our practical health vigilance recommendations in all cancer centres. Following these advices, physicians should be confident in maintaining life-saving anticancer treatment without exceedingly increasing the risk of nosocomial COVID-19 infection. Moreover, by considering the high rate of mortality and/or severe complications, intensive attention should be paid to patients with cancer and COVID-19 symptoms/infection.

Conflict of interest statement

None.

References

[1] Lambertini M, Toss A, Passaro A, Criscitiello C, Cremolini C, Cardone C, et al. Cancer care during the spread of coronavirus disease 2019 (COVID-19) in Italy: young oncologists' perspective. ESMO Open 2020;5(2).

[2] Kamboj M, Sepkowitz KA. Nosocomial infections in patients with cancer. Lancet Oncol 2009;10(6):589–97.

[3] Liang W, Guan W, Chen R, Wang W, Li J, Xu K, et al. Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. Lancet Oncol 2020;21(3):335–7.

[4] Zhang L, Zhu F, Xie L, Wang C, Wang J, Chen R, et al. Clinical characteristics of COVID-19-infected cancer patients: a retrospective case study in three hospitals within Wuhan, China. Ann Oncol 2020 Mar 26. https://doi.org/10.1016/j.annonc.2020.03.296. pii: S0923-7534(20)36383-3.

[5] Leung Nancy HL, Chu Daniel KW, Shiu Eunice YC, Chan Kwok-Hung, McDevitt James J, Hau Benien J, et al. Respiratory virus shedding in exhaled breath and efficacy of face masks. Nat Med 2020 May;26(5):676–80.

[6] Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72314 cases from the Chinese center for disease control and prevention. J Am Med Assoc 2020;323(13):1239–42.

[7] Oh WK. COVID-19 infection in cancer patients: early observations and unanswered questions. Ann Oncol 2020 Mar 3. https://doi.org/10.1016/j.annonc.2020.03.297. pii: S0923-7534(20)36384-5.