



Review

COVID-19 pandemic and patients with cancer: The protocol of a Clinical Oncology center in Tehran, Iran



Afshin Rakhsha, Samira Azghandi, Farzad Taghizadeh-Hesary*

Clinical Oncology Department, Shohada-e Tajrish Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

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ABSTRACT

Aim: To provide recommendations for the management of patients with cancer in the COVID-19 era.**Background:** The current global pandemic of COVID-19 has severely impacted global healthcare systems. Several groups of people are considered high-risk for SARS-CoV-2 infection, including patients with cancer. Therefore, protocols for the better management of these patients during this viral pandemic are necessary. So far, several protocols have been presented regarding the management of patients with cancer during the COVID-19 pandemic. However, none of them points to a developing country with limited logistics and facilities.**Methods:** In this review, we have provided a summary of recommendations on the management of patients with cancer during the COVID-19 pandemic based on our experience in Shohada-e Tajrish Hospital, Iran.**Results:** We recommend that patients with cancer should be managed in an individualized manner during the COVID-19 pandemic.**Conclusions:** Our recommendation provides a guide for oncology centers of developing countries for better management of cancer.

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1. Background

In December 2019, several pneumonia cases of unknown etiology emerged in Wuhan, China, with clinical presentations greatly resembling viral pneumonia.¹ Deep sequencing analysis from lower respiratory tract samples indicated a novel coronavirus, which was named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Therefore, the resultant clinical presentation was called the novel coronavirus disease (COVID-19). On 11 March 2020, the World Health Organization (WHO) declared the COVID-19 outbreak a pandemic.² So far, more than 1.8 million people have been infected worldwide and more than 100,000 have lost their lives because of this viral infection.³ The recent small case series by Liang et al. demonstrated that patients with cancer are more susceptible to infection with SARS-CoV-2.⁴ Therefore, clinical oncologists are faced with many questions to better manage patients with cancer during the COVID-19 pandemic. So far, limited protocols regarding preparedness plans for the care of patients with cancer during the

COVID-19 pandemic are presented.^{5–11} Although they are informative, they may not be such practical for oncology centers in developing countries.

2. Aim

In this article, we aim to present the protocol of the oncology center of Shohada-e Tajrish Hospital, Tehran, Iran regarding the management of patients with cancer during the COVID-19 pandemic.

3. Materials and methods

As clinical-oncologists at Shohada-e Tajrish Hospital, based on our personal and institutional experience and recently released guidelines, we defined the main headings about the management of patients with cancer during the outbreak. We investigated the present literature and then discussed each issue.

4. Results

In Shohada-e Tajrish Hospital, physicians and staff are well-educated to triage patients. Before the start of chemotherapy or

* Corresponding author at: Clinical Oncology Department, Shohada-e-Tajrish Hospital, Qods Sq., Tajrish, Tehran, Iran.

E-mail addresses: f.taghizadeh@sbmu.ac.ir, farzadth89@gmail.com (F. Taghizadeh-Hesary).

radiotherapy, patients are screened by the assessment of typical symptoms and evaluation of temperature, leukocytes, and C-reactive protein (CRP). Moreover, patients receive enough information for personnel protection and devices for personal protective equipment. To reduce the probability of SARS-CoV-2 transmission, all the environmental surfaces in the chemotherapy and radiotherapy treatment rooms, waiting rooms, planning rooms, etc. are disinfected according to the WHO guidelines.¹² We have also benefited from social network platforms to enhance the knowledge of patients and decrease the numbers of their visits. In this section, we present the protocol of our center to enface the management of cancer survivors and patients with cancer during the COVID-19 pandemic.

4.1. Cancer survivors

To reduce in-person hospital visits of cancer survivors during COVID-19 pandemics, we suggest delaying follow-up visits. Considering the limited data, we suggest that these patients follow the recommendations of the WHO and the Centers for Disease Control and Prevention (CDC) for general population.^{13,14}

4.2. Systemic therapies

4.2.1. Chemotherapy

4.2.1.1. Patients with a non-metastatic disease. First, we prefer the regimens with a low-Intermediate risk for febrile neutropenia (i.e. less than 20%).¹⁵ If it is unfeasible, we recommend the granulocyte-colony stimulating factor (G-CSF) support. In the case of intermediate-risk regimens (i.e. 10–20%), we consider prescribing G-CSF. Second, combination regimens can be substituted for single agents, if feasible. Third, choose the regimens with a lower frequency and shorter duration to reduce the hospital stay. Fourth, switch intravenous chemotherapy to an acceptable oral alternative.

4.2.1.2. Patients with a metastatic disease. In this case, we set the effect of the chemotherapy regimen as the criteria. If it potentially enhances the survival or alleviates patient's symptoms, we recommend the administration of a low-toxicity single-agent regimen. If the combination regimen is the choice, we recommend the G-CSF support. On the other hand, if the chemotherapy potentially prevents progression without survival benefit, the regimen is highly toxic, or the patient's performance status is minimal we recommend postponing the chemotherapy.

4.2.2. Endocrine therapy

Due to the lack of myelosuppression, endocrine therapy (e.g. tamoxifen in breast cancer, triptorelin in prostate cancer) can safely be maintained.

4.2.3. Targeted therapy

We approach patients who are treated with molecular targeted agents based on the risk of leukopenia. If it is less than 10 percent (e.g. with trastuzumab or cetuximab), they can safely be maintained or started. If this risk is equal or more than 10 percent (e.g. with sunitinib or everolimus) we discontinue the therapy.^{16,17}

4.3. Radiotherapy

Our recommendation depends on the setting. In a palliative setting (e.g. alleviation of metastatic bone pain), we recommend alternatives, if available (e.g. to optimize analgesics). If the alternatives are unfeasible, the palliative radiotherapy is the choice with following the WHO/CDC guidelines.^{13,14} In the curative setting, we recommend radiotherapy with adherence to WHO/CDC guidelines and the following considerations.^{13,14} There are several

situations where radiotherapy can be safely delayed. For instance, Olivotto et al. have shown that adjuvant radiotherapy for patients with breast cancer can be delayed up to 20 weeks without compromising the results.¹⁸ Likewise, Pisansky et al. have shown a safe postponement of definitive radiotherapy for 28 weeks in patients with intermediate-risk localized prostate cancer while receiving neoadjuvant endocrine therapy.¹⁹ In some other cases pausing patient's radiotherapy is oncologically unreasonable (e.g. radical treatment of squamous cell carcinoma of the head and neck or cervical cancer). In a neoadjuvant setting (e.g. locally advanced rectal cancer), we recommend radiotherapy with adherence to WHO/CDC guidelines.^{13,14} In these situations, staff and other patients must be protected against the risk of cross-infection.

5. Discussion

In this article, we have provided a protocol for the management of patients with cancer during the COVID-19 pandemics in a developing country, e.g. Iran. In comparison with developed countries, there are some limitations. First, the minimization of staff overlap may not be feasible due to low medical staff-to-patient ratios. Second, consideration of different rooms for either chemotherapy or radiotherapy may not be logistically feasible. Third, the assignment of private devices (e.g. breast board, fixation devices, etc.) may not be possible. Fourth, the nursing shortage during an infectious pandemic makes home-infusion of chemotherapy unfeasible. Fifth, the lack of pervasive telemedicine systems impedes remote support for patients to reduce face-to-face visits during an infectious pandemic. Sixth, the limited number of oncology centers and crowded waiting rooms make *social distancing* difficult. Seventh, the unavailability of modern technologies of radiotherapy (e.g. stereotactic radiotherapy or intensity-modulated radiotherapy) makes some treatment plans (i.e. hypofractionation), that are proposed to reduce the traffic load, impossible. Eighth, considering the necessity of sterilized or disinfected medical equipment, especially for patients with cancer, lack of dedicated computed tomography or magnetic resonance imaging for simulation limits the radiotherapy facilities. Considering these limitations, following guidelines of developed countries (including the guideline recently provided by Simcock et al.) may not be practical in developing countries.⁶ Overall, it is expected that all oncology centers provide a self-protocol to better manage patients with cancer during the COVID-19 pandemic based on available logistics and facilities.

Compliance with ethical requirements

This study contains no procedures involving human participants. All previous studies cited properly.

Authors' contributions

A.R and S.A provided the conception and design of the study, acquisition of data, analysis and interpretation of data, revised it critically for important intellectual content, and final approval of the version to be submitted; F.T.H: supplied the acquisition of data, drafting of manuscript; A.R., S.A, and F.T.H: are responsible for the article critically for important intellectual content; and A.R, S.A, and F.T.H: provided the revised the article critically for important intellectual content and gave final approval of the version to be submitted.

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Conflict of interest

None declared.

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