Cancer Care During the COVID-19 Pandemic: a Single-center Experience

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Abstract

Background: Cancer patients represent one of the most challenging group to care for during the Covid-19 pandemic. In this study, we aim to present the experience of our Oncology Department during the ongoing Covid-19 pandemic.

Methods: The activity of our Oncology Department was retrospectively analyzed from 16th March to 15th December 2020 to investigate how the organizational changes related to Covid-19 pandemic influenced the oncological activity in comparison with the same period in 2019. We also assessed the cases of SARS-CoV-2 infections observed among patients and oncology health professionals from our department.

Results: We report an important shift of the oncology activity at our department. The number of inpatients decreased by 50% while the number of treatments administered in the outpatient treatment unit decreased by 13%. We performed 4775 swabbing tests to detect SARS-CoV-2 infection in 1147 symptomatic and asymptomatic patients before receiving treatment or undergoing imaging examinations. SARS-CoV-2 infection was detected in 68 (5.9%) patients. Most of the patients were asymptomatic at the moment of the diagnosis (60%). Two patients were admitted to the intensive therapy unit; 12 had severe pneumonia and were hospitalized. All the other patients had a mild form of Covid-19 and were referred to home-based management, according to the local practice and clinical indications. Four patients died of Covid-19 related complications and 32 patients have already resumed their oncological treatment.

Conclusion: Our experience demonstrates that timely adoption of protective measures and coordinated efforts of all medical staff can lead to effective protection of

patients with cancer and healthcare professionals, while minimally disrupting adequate cancer care.

Keywords: *cancer, COVID-19, Healthcare, Medical Oncology, pandemic, patients*

Introduction

A new coronavirus, called Severe Acute Respiratory Coronavirus 2 (SARS-CoV-2) by the World Health Organization (WHO), has rapidly spread around the world in the past year. The first case of infection with this virus was reported in late December 2019 in Wuhan, China. As of December 2020, the virus affected over 200 countries, infecting more than 70,000,000 people and causing more than 1,500,000 deaths worldwide [1]. Recent data suggest that 14-19% of infected patients will develop severe forms with acute respiratory distress syndrome and multiple organ failure [2-4].

The coronavirus disease 2019 pandemic (COVID-19) has caused major changes in the provision of medical services worldwide. Cancer patients represent one of the most challenging groups to care for during the COVID-19 pandemic. Initial data from China suggested that elderly patients with multiple comorbidities, specifically diabetes, hypertension, obesity and cancer were at an increased risk of developing severe COVID-19 following SARS-CoV-2 infection [5]. As data on these risks have evolved, evidence has increasingly shown that patients with cancer are indeed a particularly vulnerable group [6-8].

Oncology faces an important challenge as patients require multidisciplinary care and are more likely to be immunosuppressed. It

is well known that some cancer patients with compromised immune systems are at an increased risk for community-transmitted respiratory viral infections, such as influenza [9]. The oncology community has been facing many difficulties regarding patient safety: the fact that patients have to come to oncology clinics to receive treatments increases the exposure to the infection and, also, the treatments themselves through side effects may predispose patients to severe forms of Covid-19.

The risk of SARS-CoV-2 transmission can be mitigated by rigorously enforcing infection control policies. In this article, we aim to present the experience of our Oncology Department during the ongoing Covid-19 pandemic.

Methods

Study design

We retrospectively analyzed the activity of our Oncology Department from 16th March to 15th December 2020 to investigate how the organizational changes related to COVID-19 pandemic influenced the volumes of oncological activity (in comparison with the same period in 2019) and the cases of SARS-CoV-2 infections observed among patients and oncology health professionals from our department. Clinical data were

obtained from electronic clinical records and through a review of medical records.

Screening and testing for COVID-19 infections were performed according to the recommendations of the World Health Organization and national standards. Laboratory testing for COVID-19 was performed using a routine real-time reverse transcription PCR (RT-PCR) on respiratory samples obtained from nasopharyngeal and oropharyngeal swabs.

SARS-CoV-1 infection prevention and control measures

Our institution (Fundeni Clinical Institute, Oncology Department) is located in Bucharest, one of the largest COVID-19 epicenters in Romania. Accordingly, since the beginning of the pandemic, we have taken several precautionary measures to be able to continue our practice in oncology and to reduce the impact on vulnerable cancer patients. These measures included: reducing the number of entrance doors for both staff and patients; mandatory triage and screening questionnaires; restricted visitor policy; social distancing in waiting rooms; reviewing every case to prioritize or postpone consultation, investigation, or treatment; increasing use of telemedicine for follow-up visits; universal COVID-19 swabbing testing for all symptomatic and asymptomatic cancer patients before treatment or imaging examinations; personal protective equipment (PPE) for medical and non-medical staff; mandatory

face mask for everyone in the building and two working shifts operating daily.

Results

We report an important shift of the oncology activity at our department during 16th March – 15th December as compared with the same calendar interval in 2019. There have been 969 inpatient admissions and 6010 outpatient visits between 16th March and 15th December 2020, vs. 1935 inpatient admissions and 6873 outpatient visits in the same period last year. Thus, the number of inpatients decreased by 50% while the number of treatments administered in the outpatient treatment unit decreased by 13%.

We performed 4775 swabbing tests to detect SARS-CoV-2 infection in 1147 symptomatic and asymptomatic patients before receiving treatment or undergoing imaging examinations. The tests were analyzed in the hospital's own laboratory using the PCR method and the results were available in a maximum 24 hours. SARS-CoV-2 infection was detected in 68 (5.9%) patients. The median age of the oncology patients diagnosed with COVID-19 was 59 years (range, 30-80 years) with a predominance of men (40 men vs 28 women). Most of the patients were asymptomatic at the moment of the diagnosis (60%). The most common symptom at onset was a cough (49%), followed by fever (42%), dyspnea (25%) and fatigue (20%). All the patients were active oncological patients with the following diagnoses: colorectal cancer (26), gastric cancer (11), pancreatic ductal adenocarcinoma (8), neuroendocrine tumors

(6), breast cancer (3), cholangiocarcinoma (3), small bowel GIST (1), gastric GIST (1), hepatocellular carcinoma (4), mesothelioma (1), non-small cell lung cancer (1), hip sarcoma (1), prostate cancer (1), and ovarian cancer (1). Two of the patients were admitted to the intensive therapy unit; 12 had severe pneumonia and were hospitalized. All the other patients had a mild form of COVID-19 and were referred to home-based management, according to the local practice and clinical indications. Four patients died of COVID-19 related complications and 32 patients have already resumed their oncological treatment.

All staff members of the Oncology Department underwent oropharyngeal and nasopharyngeal swab testing every 2 weeks during the state of emergency (16th March-15th May) with negative results. After the lockdown, only symptomatic staff members were tested. Up to 15th December 2020, 2 persons tested positive for SARS-CoV-2 infection. However, none of these cases could be tracked down to inappropriate personal protective equipment use or intra-hospital contagion.

Discussion

Reporting of real-world data should be encouraged to offer a better understanding of how the SARS-CoV-2 pandemic is impacting on cancer care worldwide. Careful organizational measures allowed for a moderate reduction of oncological activities in our department and an overall low number of patients and staff infected with SARS-CoV-2.

Implementation of triage, access reduction, social distancing policies, remote consultations, the use of face masks and systematic SARS-CoV-2 testing were all largely accepted by patients and minimally interfered with the effective delivery of cancer care. Cancer-specific protective measures recommended by national and international scientific societies were adopted early during the course of the epidemic; we tried to prioritize the oncological treatment and we maintained virtual multidisciplinary meetings on a weekly basis, as per our standard clinical practice. Considering the lack of clear data supporting the idea that oncological treatment-related adverse events may imply a higher risk of SARS-CoV-2 infection or predict a worse disease course, systemic treatments were not de-escalated and/or postponed. Consequently, there was only a moderate reduction in the number of outpatient visits compared to the same period of the last year (13%). The most worrisome concern is that the inpatient admissions were reduced by 50%; however, this could be attributed to the significant reduction of our inpatient unit capacity during this period. There are only a few other centers that reported their experience and have estimated a cumulative reduction in the overall number of patients with cancer admitted to hospitals ranging from 20 to 30% [6-10].

Data reported on SARS-CoV-2 infections in staff members and oncological patients are meant to be purely descriptive and have no epidemiological value. However, in our

experience, the numbers are low, suggesting that thoughtful organizational and protective measures might keep the risk of infection to a minimum while allowing to maintain the cancer care activities. Regarding medical staff SARS-CoV-2 infections, the Wuhan Union Hospital reported a 1.7% infection rate among healthcare workers [11]. In an analysis of information from the U.K. and U.S, frontline health care workers had an 11.6-times higher risk of testing positive and those who reported that they had inadequate access to PPE had a 23% higher risk compared with the general community [12]. In our department, only 2 staff members tested positive for SARS-COV-2 infection, with a mild form of COVID-19 that did not require hospitalization or specific treatment. However, none of these cases could be tracked down to inappropriate personal protective equipment use or intra-hospital contagion.

Regarding cases of infection in our patient population with cancer, we performed 4775 tests in 1147 patients with 68 positive tests. Our reported infection rate of 5.9% is higher than that reported in other studies. For example, results of a large Chinese study from Wuhan including 1524 oncological patients indicated an infection rate of 0.73% [13]. Another study conducted in a large German Department of Radiation Oncology where PCR testing was performed in asymptomatic cancer patients, also reported an infection rate of 0.72% [14]. However, both studies reported their experience over a few months (2-3 months)

while our study period was significantly longer (9 months).

Whether incidence and clinical severity of SARS-CoV-2 infection in oncological patients is different from those in the general population, remains to be answered. Currently available evidence is limited and with conflicting results [7, 15-18]. The number of severe cases requiring hospital admission appears to be low in our experience. However, according to Liang *et al.* [7], the cancer patients had a higher risk of severe events such as admission to an intensive care unit who required invasive ventilation, or died, as compared with non-oncologic patients [19]. On the other hand, a study by Brar *et al.* [20] demonstrated that the presence of cancer and recent anticancer therapy were not predictors of worse COVID-19 outcomes. Presenting symptoms and in-hospital complications were similar between the cancer patients and the patients without cancer. Furthermore, there were no statistically significant differences in morbidity or mortality between the two groups of patients.

The potential long-term impact of the COVID-19 pandemic on oncology care should be considered. Suspension of screening programs, diagnostic procedures, follow-up visits are predicted to lead to a 5–10% decrease in survival in high-income countries [21, 22].

Conclusion

The experience we report herein suggests that timely and the thoughtful

adoption of organizational and protective measures, coordinated efforts of all medical staff can lead to effective protection of

healthcare workers and patients with cancer, while minimally disrupting adequate cancer care.

Abbreviations:

COVID-19 – Coronavirus Disease 2019

PPE – Personal Protective Equipment

RT-PCR – Real-Time Reverse Transcription Polymerase Chain Reaction

SARS-CoV-2 – Severe Acute Respiratory Coronavirus 2

WHO – World Health Organization

Statements

Authors' contributions:

Vlad Mihai Croitoru: wrote the paper, conceived the analysis

Diana Bogdan: statistical analysis

Ioana Mihaela Dinu: statistical analysis, review of the manuscript

Monica Ionela Miron: review of the manuscript

Irina Mihaela Cazacu: wrote the paper, conceived the analysis

Ioana Niculina Luca: review of the manuscript

Iulia Gramaticu: review of the manuscript

Florina Buica: review of the manuscript

Catalin Guiu: review of the manuscript

Adina Emilia Croitoru: study design, review of the manuscript

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