

COVID-19 pandemic: changes in cancer admissions

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ABSTRACT

Background COVID-19 pandemic could create a collateral damage to cancer care denoting disruptions in care due to a significant burden on healthcare and resource allocations. Herein, we evaluate the early changes in the inpatient and outpatient oncology clinics to take a snapshot of this collateral damage at Hacettepe University Cancer Institute.

Methods Patients applying the outpatient clinic and outpatient palliative care (OPC) clinic for the first time and patients admitted to inpatient wards in the first 30 days after the first case of COVID-19 in Turkey were evaluated. These data were compared with data from the same time frame in the previous 3 years.

Results The mean number of daily new patient applications to the outpatient clinic (9.87 ± 3.87 vs 6.43 ± 4.03 , $p < 0.001$) and OPC clinic (3.87 ± 1.49 vs 1.13 ± 1.46 , $p < 0.001$) was significantly reduced compared with the previous years. While the number of inpatient admissions was similar for a month frame, the median duration of hospitalisation was significantly reduced. The frequency of hospitalisations for chemotherapy was higher than in previous years ($p < 0.001$). By comparison, the rate of hospitalisations for palliative care ($p = 0.028$) or elective interventional procedures ($p = 0.001$) was significantly reduced.

Conclusion In our experience, almost all domains of care were affected during the pandemic other than patients' systemic treatments. There were significant drops in the numbers of newly diagnosed patients, patients having interventional procedures and palliative care services, and these problems should be the focus points for the risk mitigation efforts for prevention of care disruptions.

INTRODUCTION

Towards the end of 2019, a cluster of pneumonia cases was reported from Wuhan, China caused by a¹ novel coronavirus

named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).² The clinical disease is later referred to as COVID-19. With no approved therapies for treatment or prevention,³ COVID-19 has rapidly spread across all continents, leading to declaration of the disease as a pandemic by the WHO.⁴ Turkey is among the countries that have been significantly affected by the COVID-19 pandemic even though the first confirmed case delayed until 10 March 2020.⁵

With social isolation being the main way of prevention⁶ and in-hospital contamination in more than one-third of cases in the first series,⁷ COVID-19 changed the way we live and care for our patients. Mortality and morbidity from COVID-19 are greatly increased in advanced ages and patients with chronic diseases, including cancer.⁸ Many of the patients with high-risk cancer showed a rapid deterioration after SARS-CoV-2 infection, and a third have required mechanical ventilation or died.^{9 10} However, more significant harm is expected to be on patients with cancer without COVID-19 due to disruptions in the multiple domains of cancer care including diagnostic procedures, palliative care, interventional procedures and follow-up visits which can lead to the poor oncological outcomes. This potential harm can be called as collateral damage and prevention of this damage is paramount. The expert panels suggested strategies like telemedicine use, adaptations in the treatment plans like increased use of oral treatments and hypofractionated radiotherapy schemes, and rapid discharges for inpatients^{11 12} for risk mitigation of care disruptions. The exact magnitude of harm on cancer care is hard to quantify yet, but some level of disruption seems to be already present.¹³ So, in this paper, we aimed to evaluate the early changes in the

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inpatient and outpatient clinics at Hacettepe University Cancer Center during the first 30 days of COVID-19 pandemic to take a snapshot of the collateral damage of COVID-19 on cancer care together with the simple safety measures for continuum of care.

METHODS

Patients applying the outpatient clinic for the first time, and patients admitted to wards in the first 30 days (11 March 2020 to 9 April 2020) after the first case of COVID-19 in Turkey were evaluated. The selected initial date was also the declaration date of COVID-19 as a pandemic. These patient data were compared with data from the same time frame in the previous 3 years (2017–2019). Baseline demographics of all patients recorded with hospitalisation setting, cause of hospitalisation and in-hospital mortality in inpatients. Besides, admissions to the outpatient palliative care (OPC) clinic were recorded for the 2019 and 2020. Baseline characteristics were expressed by the descriptive statistics (means, medians, frequencies and percentages). χ^2 test was used to compare the categorical variables while the t-test was used for the admission times. Statistical Package for Social Sciences V.26 program was used in the analyses. P values <0.05 were considered statistically significant.

RESULTS

We evaluated a total of 868 inpatient and 809 outpatient admissions in the study with 114 OPC clinic admissions during the first 30 days of the COVID-19

pandemic in our centre. The mean number of daily new patient applications to the outpatient clinic was significantly reduced compared with the previous 3 years (9.87 ± 3.87 vs 6.43 ± 4.03 , $p < 0.001$). The reduction in new patient numbers was observed for all tumour types except for lung cancer and head and neck cancers. The number of patients seeking medical advice to rule out a suspected cancer diagnosis was also lower (figure 1). Although it did not reach statistical significance, there was a trend towards an increased percentage of advanced-stage patients in 2020 ($n = 751$, $p = 0.094$). Also, the mean number of patients applying, either by self-application or by referral, to OPC clinic was significantly reduced compared with last year (3.87 ± 1.49 vs 1.13 ± 1.46 , $p < 0.001$). While the number of inpatient admissions, compared with the previous 3 years, was similar for a month frame (228 vs 213), the median duration of hospitalisation was significantly reduced to 2 days (1–41) from 3 days (1–65). Notably, the in-hospital mortality was 1.8%, comparable to 9.1% in-hospital mortality in the previous 3 years ($p < 0.001$).

Consistent with the prioritisation of management plans for patients with cancer, there was a trend towards decreased admissions from the emergency department ($p = 0.113$), and a significantly smaller fraction of the patients with cancer with the localised disease were admitted for procedures (online supplementary table 1). Notably, a significantly higher portion of patients had advanced tumours requiring cancer treatments as inpatients, when compared with

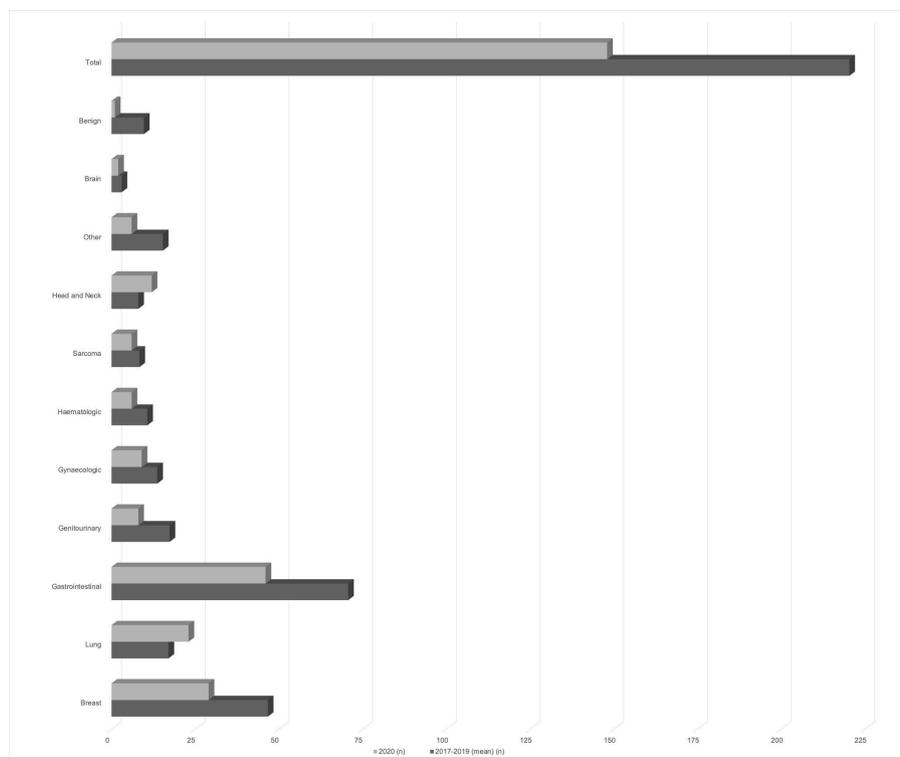


Figure 1 Patients applied to the outpatient clinic according to diagnoses.

the previous 3 years (84.6% vs 76.7%, $p=0.012$). Accordingly, the frequency of hospitalisations for chemotherapy was also higher than in previous years (61.8% vs 45.3%, $p<0.001$) probably due to logistic reasons like limitations for intercity transfer and street curfew for patients aged >65 years. Some of our patients were able to come to the hospital with special permits, and these patients had chemotherapy with daily hospitalisation for the easier arrangement in a day. By comparison, the rate of hospitalisations for palliative care ($p=0.028$) or elective interventional procedures ($p=0.001$) was significantly reduced.

DISCUSSION

Although we know the problems of patients with cancer and COVID-19,⁹ patients with cancer without COVID-19 could be severely affected. Many institutions are allocating staff and resources to cope with the burden generated by COVID-19, and routine controls of patients with cancer are being postponed. However, in patients under treatment, continuum of care in the safest settings possible should be the priority. So, the oncology clinics, including our clinic, undertook multiple isolation and hygiene measures, and adaptations in the workplace for maintaining the care of patients in a safest environment¹⁴ (box 1).

We were able to continue inpatient oncological care and systemic treatments of our patients in our hospital in the first 30 days of the pandemic with no inpatients infected with SARS-CoV-2 by simple hygiene and isolation measures, a more rapid discharge policy and referral of the patients with fever to pandemic hospitals from the triage doors on hospital entry. However, similar outcomes could be hard to attain in institutions located in the epicentres of the disease and without an isolated oncology hospital as evidenced by the more than 25% nosocomial contamination in the report by Zhang *et al.*¹⁰ While hospitalisation in another hospital could be beneficial for keeping oncology hospitals COVID-19 free, this setting could restrict access to palliative care services for patients with cancer and COVID-19 as many services of our OPC clinic did not serve in the COVID-19 clinic.

Oncologists often have the difficult task of providing maximum protection of their patients with cancer from COVID-19 by reducing their exposure to healthcare facilities while also continuing the timely delivery of supportive care and cancer treatment modalities. Although all domains of oncological care could be affected, palliative care, which is often the orphan child of oncology, could be more prone to be affected. In our experience, significantly reduced hospitalisations for symptom palliation and reduced OPC clinic applications pointed out to this issue. Patients could suffer from cumbersome symptoms due to problems with healthcare access and fear about COVID-19 infection. We think that the

Box 1 Our precautionary measures for patients with cancer in our clinic

1. Measures were taken and floors were appropriately marked to maintain a minimum physical distance of >1 m among visitors and patients in the treatment facilities, blood collection units and waiting rooms.
2. The routine follow-up visits of patients in continued remission for more than 2 years were postponed and replaced with phone call follow-ups.
3. Triage desks were established at multiple locations of the cancer centre for temperature measurement and symptom questioning of visitors to restrict the entry and movements of potential COVID-19 cases.
4. Numbers of relatives and caregivers kept to one person only. No companions were allowed for independent patients who did not need assistance.
5. Hospitalisation times tried to be kept short and patients were discharged as soon as their clinical conditions stabilised and improved. Outpatient clinic visits or symptom questioning via telemedicine was used for shortening the hospitalisation times.
6. An isolated rapid evaluation room was established to process patients with respiratory symptoms or fever until their transfer to the COVID-19 pandemic clinic for possible hospitalisation.
7. Patients under active treatment were directed to seek assistance in outpatient palliative care facilities to manage their disease-related symptoms rather than visit the emergency room department.
8. All new patients were given same-day appointments to avoid any delays in the initiation of their oncological care.
9. All admitted patients with respiratory symptoms, fever or oxygen requirements were hospitalised in isolation until the documentation of a negative PCR for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and determination of the cause of these symptoms.

impact on palliative care could be more significant in other countries for several reasons. First, Turkey did not need to implement disaster triage due to a slow disease peak. Besides, we frequently give palliative care in oncology clinics due to paucity of the palliative care clinics and the prohibition of do-not-resuscitate orders in our country, so our terminal stage patients can mostly be spared from the closing or repurposing of the palliative care clinics for resource allocation. In the study, fewer patients were hospitalised for interventional procedures, which also deserves concern. Interventional procedures are a vital part of oncological care, but prone to disruption due to increased workload on the radiology clinics during COVID-19.

While it was possible to continue the already started treatments with simple precautions, we think that changes in the outpatient clinic applications give a signal for a bigger problem and can be reflected more in the cancer care in the following months. New applications to oncology were dropped

almost 30% with drops in breast, and gastrointestinal cancers were more prominent (figure 1). While these tumours were frequently diagnosed in the early stages without symptoms, frequency of lung cancer was stable which is frequently diagnosed in advanced stages with symptoms.¹⁵ As previously reported, cancer screening procedures significantly reduced and even halted during the pandemic.¹³ Similarly, postponing of all elective endoscopies and mammograms could be the reason for our results. Whether there will be a widespread stage migration due to COVID-19 in screen-detected and early-stage cancers should be closely followed.

In conclusion, we think that COVID-19 could significantly affect cancer care with the greater impact expected on the newly diagnosed patients and patients in need of palliative care services. These issues should be the focus points to prevent patients with cancer from late diagnosis and interruption of palliative care services.

Contributors DCG and ZA have planned the work. DCG, BYA, MSA, EU, TKS, HCY, GG, NK, OD, SK, SA, SY, AT and ZA participated in patient care and data collection. All authors, namely DCG, BYA, MSA, EU, TKS, HCY, GG, NK, OD, SK, SA, SY, AT, FMU and ZA, have made significant and substantive contributions to the reporting of the work. All authors have participated in the review of relevant literature, drafting of the manuscript, review and revisions of the final draft. DCG, FMU and ZA have analysed the data and determined the main conclusions. DCG has prepared the first draft of the manuscript. All authors reviewed and participated in the preparation of the revised and final version of the manuscript. DCG and ZA are responsible for the overall content as guarantors.

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REFERENCES

- Huang C, Wang Y, Li X, *et al.* Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020;395:497–506.
- Zhou P, Yang X-L, Wang X-G, *et al.* A pneumonia outbreak associated with a new coronavirus of probable bat origin. *Nature* 2020;579:270–3.
- Uckun FM. Reducing the fatality rate of COVID-19 by applying clinical insights from Immuno-Oncology and lung transplantation. *Front Pharmacol* 2020;11:796.
- Organization WH. *Who Director-General's opening remarks at the media briefing on COVID-19-11 March 2020*. Geneva, Switzerland, 2020.
- Demirbilek Y, Pehlivan Türk G, Özgüler Zeynep Özge, *et al.* COVID-19 outbreak control, example of Ministry of health of Turkey. *Turk J Med Sci* 2020;50:489–94.
- Wilder-Smith A, Freedman DO, Isolation FDO. Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *J Travel Med* 2020;27:taaa020.
- Wang D, Hu B, Hu C, *et al.* Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *JAMA* 2020;323:1061–9.
- Guan W-J, Liang W-H, Zhao Y, *et al.* Comorbidity and its impact on 1590 patients with COVID-19 in China: a nationwide analysis. *Eur Respir J* 2020;55:2000547.
- Liang W, Guan W, Chen R, *et al.* Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. *Lancet Oncol* 2020;21:335–7.
- Zhang L, Zhu F, Xie L, *et al.* Clinical characteristics of COVID-19-infected cancer patients: a retrospective case study in three hospitals within Wuhan, China. *Ann Oncol* 2020;31:894–901.
- Desideri I, Pilleron S, Battisti NML, *et al.* Caring for older patients with cancer during the COVID-19 pandemic: a young International Society of geriatric oncology (SIOG) global perspective. *J Geriatr Oncol* 2020.
- Mehta AK, Smith TJ. Palliative care for patients with cancer in the COVID-19 era. *JAMA Oncol* 2020. doi:10.1001/jamaoncol.2020.1938. [Epub ahead of print: 07 May 2020].
- Dinmohamed AG, Visser O, Verhoeven RHA, *et al.* Fewer cancer diagnoses during the COVID-19 epidemic in the Netherlands. *Lancet Oncol* 2020;21:750–1.
- Cortiula F, Pettke A, Bartoletti M, *et al.* Managing COVID-19 in the oncology clinic and avoiding the distraction effect. *Ann Oncol* 2020;31:553–5.
- Miller KD, Nogueira L, Mariotto AB, *et al.* Cancer treatment and survivorship statistics, 2019. *CA Cancer J Clin* 2019;69:363–85.