

## ORIGINAL ARTICLE

# Decrease of oncological patients' hospital visits during Covid-19 pandemic; the experience of a tertiary Romanian centre

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## Summary

**Purpose:** The outbreak of COVID-19 pandemic has changed the provision of medical services worldwide. We assessed the impact of the pandemic on the oncological patients' visits to a tertiary cancer centre.

**Methods:** We analysed registrations from the administrative data system of in- and outpatients in all of the departments of the Cluj-Napoca Oncology Institute, during March-October 2020, and compared to the same 7-month period of the previous year.

**Results:** The decrease during March-October 2020 was 40.2% for new referrals overall (with the most significant drop in April, of 80%), 52.5% for medical oncology inpatients, 39% for paediatric oncology department inpatients, 69% for radiotherapy inpatients, 34.9% for surgical interventions and 31% decrease of issued pathology reports. The decrease was less important for outpatients: only 10% for medical

oncology outpatient department, 33% for radiotherapy and 27% for breast cancer unit outpatients. Imaging investigations were only slightly influenced by the pandemic (reduction of 5% for MRI scans, 19% for mammograms, whereas performed CT scans were even more after the outbreak of COVID-19).

**Conclusions:** Our results show a decrease in the number of patients during the period after the outbreak of the COVID-19 pandemic, more for inpatients and less significant for outpatient departments, probably because of the internal circuits reorganization but also because of health care measures taken nationally and locally to limit the spread of the pandemic.

**Key words:** COVID-19, disruption, oncology referrals, pandemic

## Introduction

The medical services in Romania, similarly to other European countries, have been disrupted by the COVID-19 pandemic. However, oncological patients kept on with their treatments, although screening programs have been reduced worldwide [1].

The virus was confirmed to have reached Romania on 26<sup>th</sup> February 2020, when the first case was confirmed and reported. Progressive meas-

ures were taken during the following weeks, lockdown was imposed on 22<sup>nd</sup> of March [2], and it was lifted almost 2 months later, on 14<sup>th</sup> of May, when an alert status was declared, and relaxation measures were taken. After mid-September, the number of daily cases started to increase again, similarly to other European countries, which face during the fall the second wave of the COVID-19 pandemic.

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The Oncology Institute of Cluj-Napoca is a large tertiary oncological centre, receiving patients from most parts of the country, and one of the first cancer centres from Romania with OEIC accreditation. Measures were also taken locally: the setting up of triage points to screen all patients for COVID-19 symptoms, patient testing, patient circuits were put in place, and one hospital ward was reorganized as COVID-19 department in order to admit positive detected patients prior to their transfer to specialized hospitals, all in the attempt to remain COVID-free and to limit the interaction of patients found with a COVID-19 infection from the rest of patients undergoing various oncological treatments. Similar measures were taken in oncology departments all over Europe [3]. Likewise, American medical oncology specialists published in JAMA viewpoint, indicating measures very much alike, to preserve health care resources [4].

After the lockdown, the patients' addressability towards the Institute changed. On one hand administrative restrictions and on the other hand patients' decisions, made them go to oncologists closer to their homes to avoid traveling by train/busses or to reduce frequent visits in a crowded hospital. Moreover, complying with ESMO recommendations [5,6] and the recommendations of the National Society of Medical Oncology [7], physicians tried to reduce patients' visits to the hospital by prioritizing visits and postponing non-essential follow-ups and surgical interventions. Moreover, telemedicine [8] was regulated by law used whenever possible, prescriptions were issued for 3 months when possible (i.e. hormonal therapy), oral and subcutaneous therapies were preferred when this was safe from immunosuppressive side effects, and patients were encouraged to continue maintenance therapies (eventually with non-im-

munosuppressive systemic therapies) in county hospitals, closer to their homes.

We hereby assessed the extent of the decrease of visits of oncological patients during the period after the lockdown imposed by authorities' decisions in the Oncology Institute of Cluj-Napoca, Romania.

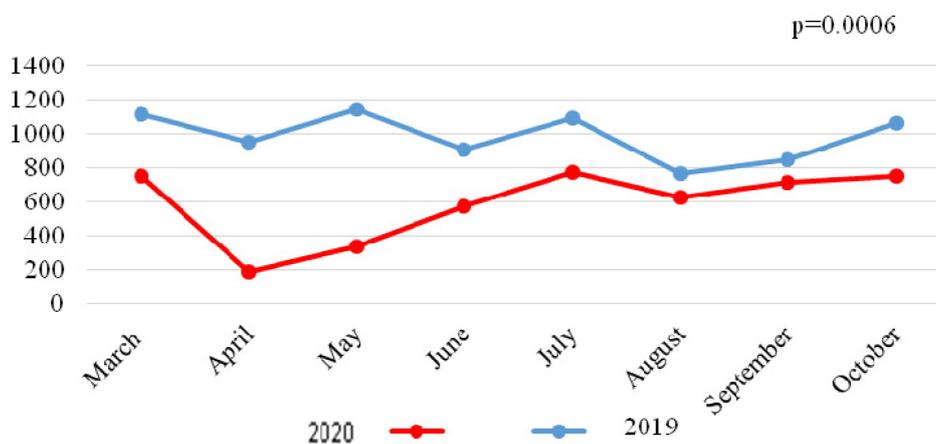
## Methods

We analysed the data of patients' medical recordings from the InfoWorld® internal administrative system during March-October 2020 and during the same period of the previous year, 2019. We collected data on new referrals, on in- and outpatients in all departments (surgery and pathology, medical oncology, radiotherapy, imaging, oncopaediatics). Data analysis was performed using Microsoft Excel for Microsoft 365 MSO, version 2102. Student-t-two-tailed tests were used in order to assess the statistical significance of the correlation coefficients. A p value < 0.05 was considered to be statistically significant

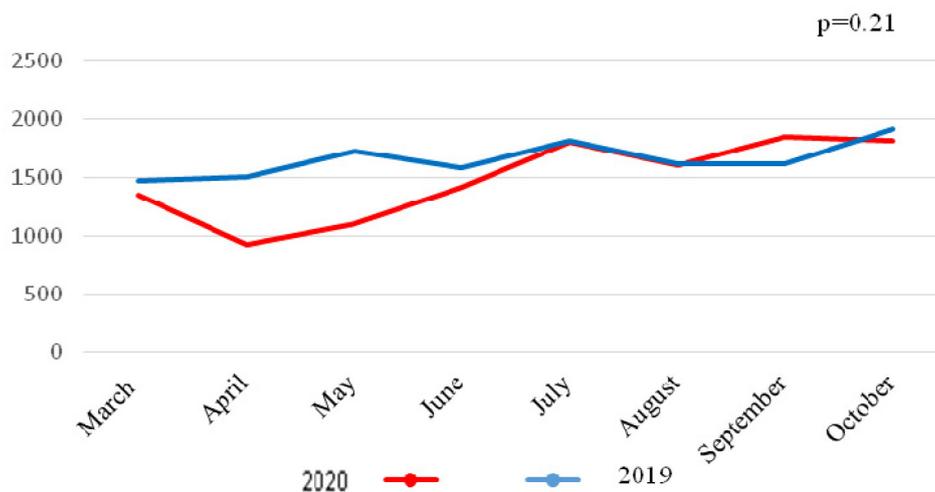
## Results

The total number of patients who were registered for the first time in the Oncology Institute of Cluj-Napoca during March-October 2020 dropped by 40.2% compared to the same period of 2019, but the most significant reduction of new referrals was seen in April (80%; p=0.0006). As of June, the numbers became closer to the ones of the previous period, as shown in Figure 1.

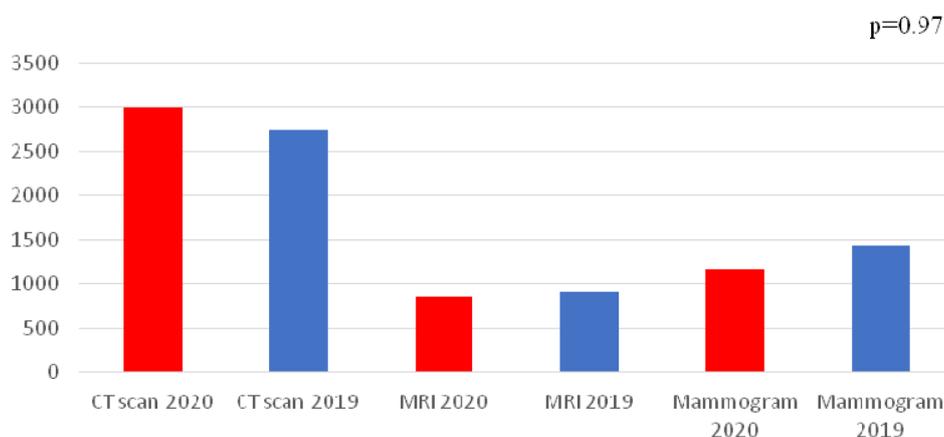
The outpatient department for clinical oncology became the department of interest for patients receiving chemotherapy, as the inpatient ward was restricted by epidemiological regulation only for severely ill patients, emergency cases related to chemotherapy toxicities and admissions were additionally limited by the imposed social distanc-



**Figure 1.** New referrals of all patients in the Oncology Institute.



**Figure 2.** Number of outpatients in the medical oncology department.



**Figure 3.** Imaging examinations during March-October 2020 and 2019.

ing guidelines. Admissions for inpatients in the medical oncology department dropped by 52.5%. However, as indicated in Figure 2, the total number of outpatient visits during March-October 2020 dropped only by 10% overall ( $p=0.21$ ), mostly due to the April-May decrease, by 38% and 35%, respectively.

The same descending trend was observed for inpatients of the paediatric oncology department (a decrease of 39%) and the radiotherapy department (69%). The number of radiotherapy outpatients decreased by 33%, and similarly, for the breast cancer unit, where the outpatient number drop was 27%.

As for surgical departments, the number of performed interventions decreased by 34.9%, and consequently, fewer pathology reports were issued during March-October 2020 (a reduction of 31% in pathological reports).

Regarding imaging examinations (Figure 3), the number of MRIs and mammograms during

March-October 2020 was only slightly lower than in March-October 2019 (with 5.3% for MRIs and 19.4% for mammograms,  $p=0.97$ ). In contrast, there were more CT scans performed during March-October 2020 than during the same 7-month period of the previous year (2989 CT investigations during the pandemic period versus 2752 in March-October 2019).

## Discussion

The impact of the COVID-19 pandemic has multiple implications for cancer health care in several aspects, including the patients' increased risk of contacting the infection and developing severe complications, delayed cancer diagnosis because of suspended screening programs, and lower referrals of patients to hospital because of the fear of contacting the virus, deprioritization of non-COVID cases, reducing recruitment into clinical trials and even interrupting them during lockdown [1].

Visits of cancer patients' hospital have decreased during the pandemic all over the world. In England, the number of urgent general practitioners' referrals for cancer dropped by 60% in April compared with the same month last year [9]. Another report from the US reported a cumulative deficit in outpatient visits of 40% between March 15 and June 20, but later in October, the number of visits returned to pre-pandemic numbers [10,11].

For the Netherlands, figures show that there is a notable decrease in cancer diagnoses when compared with the period before the COVID-19 outbreak [12], as well as in Slovenia, where compared to the November-February average, the decrease in April was about 33%, 46% and 85% for first, control and genetic counselling referrals, respectively. In May, the number of all types of referrals started rising again [13].

In our study, the most significant decrease was for inpatients. This is somehow expected, as all the Oncological Institute departments were reorganized to order to admit fewer patients in the attempt to limit as much as possible an eventual outbreak of COVID-19 infection among hospitalized patients. Furthermore, alternatives were found for patients to receive their treatments in the outpatient departments, to limit contact with hospital personnel and with each other. Patients continued oncological treatments (chemotherapy, immunotherapy perfusions), as well as toxicity management treatment options, whenever possible, in outpatient units. The hospital admissions were reserved strictly for emergencies, for long iv chemotherapy perfusions or for patients at risk of developing acute chemotherapy toxicities [14,15].

Therefore, although the number of new referrals decreased overall quite significantly, the drop was less important for the outpatient departments. For the medical oncology outpatient department, the overall decrease was only 10%, and the highest drop was registered strictly during the lockdown period, while afterwards, the number of visits was comparable to those of last year. This also applies to imaging departments, where patients continued to be investigated, either by MRI, CT scan, or mammogram.

Radiotherapy during the pandemic months was a real challenge because of the need for daily hospital visits. In this study, the lowest addressability was recorded by the radiotherapy inpatient department (a drop of 69%). This may be due to the measures taken at this level to prevent COVID-19 infections, including scheduling patients at different intervals without mixing outpatients with inpatients, periodically testing patients, and regularly

disinfecting facilities. Similar declines have been reported elsewhere in the world, with the normal volume decreased to 68% on average [16].

Another collateral victim that has suffered from the COVID-19 outbreak is surgery. During the peak of the pandemic, the global attitude was to delay most operations except for emergencies. A Swiss oncological surgery department reported a decrease of 27% of performed operations in the early phase of the pandemic [17]. The impact of these delays on future cancer progression and death remains unknown. An estimating model study from the UK showed that a delay of surgical operation of 3 to 6 months across all stage cancers was estimated to cause more than 4700 deaths per year in the UK [18]. Despite relaxation measures, the number of performed operations remains lower than during the same period of the last year, and the reason is mainly due to the reorganization of surgery departments to ensure all protection means for inpatients.

Overall, the impact of the COVID-19 pandemic on oncological patients is far from being yet completely foreseen. For example, as screening programs were halted at first, Del Vecchio Blanco et al presume that this will lead colorectal cancers in a more advanced stage at diagnosis, which could impact the effectiveness of screening of colorectal cancer mortality and increase costs in terms of healthcare economy [19]. Projections for the USA show that cumulative excess deaths from colorectal and breast cancers between 2020 and 2030 could be around 1% [20]. Likewise, a population-based modelling study from the UK estimates that 5-year deaths from now due to delayed diagnosis may be 4-17% higher depending on tumour type compared to pre-pandemic models [21]. Lives of most oncology patients depend on their ability and best timing to receive oncological, surgical and radiotherapy care. Postponing screening, follow-up and radical surgeries increase patients' risk of developing progressive disease [22].

## Conclusion

Similar to other oncological centres from different countries, the Oncological Institute of Cluj-Napoca, Romania, registered a decreased number of patients across various departments during the period after the outbreak of the COVID-19 pandemic, more for inpatients and less significantly for outpatient departments. Up to the moment of this study publication, the Cluj-Napoca Oncology Institute continued providing oncological medical and surgical care to patients, adapting to the challenges of this unprecedented situation. But for

sure, the COVID-19 pandemic has changed the way medical services are organized, and we need more studies to find out to what extent these disruptions will affect the outcome of oncological patients.

### Authors' contribution

Calin Cainap, Cristina Crisan and Catalin Vlad designed the research study; Ovidiu Balacescu, Loredana Balacescu, Andrada Deac, Andrei Havasi performed the research; Cristina Crisan, Ovidiu Bochis, Calin Cainap analyzed the data; Simona Cainap, Catalin Vlad supervised the research study; Cristina Crisan, Calin Cainap, Andrada Deac, Andrei

Havasi wrote the original paper; Simona Cainap, Calin Cainap, Ovidiu Balacescu, Catalin Vlad reviewed the paper.

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### Conflict of interests

The authors declare no conflict of interests.

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