Scientific Research Publishing

Journal of Cancer Therapy, 2024, 15, 83-91
https://www.scirp.org/journal/jct
ISSN Online: 2151-1942
ISSN Print: 2151-1934

Impact of the COVID-19 Pandemic on Cancer Patients: Experience of the Medical Oncology Department of CHU HASSAN II Fez

Khadija Hinaje*, Oumaima Talbi, Lamiae Amaadour, Karima Oualla, Zineb Benbrahim, Samia Arifi, Nawfel Mellas

Department of Medical Oncology, Hassan II University Hospital, University Sidi Mohamed Ben Abdellah, Fez, Morocco
Email: *khadijahinaje@gmail.com

How to cite this paper: Hinaje, K., Talbi, O., Amaadour, L., Oualla, K., Benbrahim, Z., Arifi, S. and Mellas, N. (2024) Impact of the COVID-19 Pandemic on Cancer Patients: Experience of the Medical Oncology Department of CHU HASSAN II Fez. *Journal of Cancer Therapy*, **15**, 83-91.
https://doi.org/10.4236/jct.2024.153009

Received: February 15, 2024
Accepted: March 19, 2024
Published: March 22, 2024

Abstract

Introduction: In December 2019, COVID-19 spread worldwide, but did not officially start in Morocco until March 02, 2020. Since then, this pandemic has significantly impacted the health status of patients in general and cancer patients in particular. The main objective of our study is to evaluate the prognosis of patients treated for cancer and infected with COVID-19. **Material and Method**: A descriptive study with prospective collection was carried out at the medical oncology department of CHU Hassan II in Fez over a period of two years, from March 2020 to March 2022. Data was carried out on the software SPSS. **Results:** One hundred cancer patients tested positive for COVID-19 infection and were collected within our department. The average age was 56 years (22 - 91). The sex ratio was 1.2. Patients with breast cancer were the most affected by this infection (34%). The clinical symptomatology was dominated by the respiratory syndrome (45%). The diagnosis was made through thoracic CT scan in 62% of cases. 76% of patients were in a metastatic stage. 96% of patients were undergoing oncological treatment. For symptomatique patients, the standard treatment approach involved using antibiotics in 76% of cases. Evolution was marked by recovery in 79% of patients, with a death rate of 12% in this cancer patient population. **Conclusion:** COVID-19 infection is particularly severe in cancer patients. Mortality among these patients remains high and is associated with overall patient characteristics. However, anticancer treatments have not shown deleterious effects on the course of COVID-19.

Keywords

COVID-19, SARS-CoV-2, Cancer

1. Introduction

On December 2019, the World Health Organization received reports of pneumonia cases in Wuhan, China, with an unidentified cause [1]. A new type of coronavirus, named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was determined to be responsible for the emergence of coronavirus disease 2019 (COVID-19) [2]. In the subsequent months, the virus spread beyond China to other parts of the globe, and was declared a pandemic by the World Health Organization (WHO) on March 11, 2020 [3]. In Morocco, the first case of COVID-19 was declared on March 2, 2020. "Health State of Emergency" was announced on March 19, 2020, and by May 22, 2020, the country recorded 7332 confirmed cases and 197 deaths [4]. The first data specific to cancer patients was based on Chinese study included approximately 1600 patients with laboratory-confirmed acute respiratory illness secondary to COVID-19, 18 of whom had cancer [5]. COVID-19 rate appeared to be higher in cancer patients than in the general population (1% vs 0.29%). In particular, among infected patients, the risk of developing severe respiratory complications requiring intensive care was higher in cancer patients than in non-cancer patients (39% vs 8%; $p = 0.0003$). Advanced age was identified as the only risk factor associated with serious events due to SARS-CoV-2 infection in cancer patients. Additionally, patients who had undergone chemotherapy or surgery in the months prior to infection had a higher risk of developing severe respiratory complications (OR: 5.34; $p = 0.0026$). However, these 18 patients represent a heterogeneous group, so they are not an ideal representation of the entire population of cancer patients.

The main objective of our study is to describe the characteristics of cancer patients and COVID-19 in order to improve knowledge of the severity of infection in these patients and to see the impact of SARS-COV-19 infection on cancer management.

2. Material and Method

To meet our objectives, a monocentric, prospective study was conducted at the Medical Oncology Department of CHU HASSAN II Fez over a two years period, from March 2020 (start of the COVID-19 pandemic in Morocco) to March 2022 (end of the acute phase of the COVID-19 pandemic, according to the WHO).

Our study population includes all patients with cancer treated at the Medical Oncology Department of CHU HASSAN II Fez, who tested positive for SARS-CoV-2.

The positivity of the infection is confirmed by two methods:

- Nucleic acid amplification test or Polymerase Chain Reaction (PCR), which is a molecular biology method for gene amplification *in vitro*; it's used to detect the presence of the virus and measure viral load, with a sensitivity of 65% and a specificity of 83% in diagnosing COVID-19.

- Chest CT scan, a routine imaging tool that is quick and relatively easy to perform with a sensitivity of 97% and a specificity of 25% in diagnosing COVID-19. The presence of a ground-glass opacity, crazy paving (ground-glass opacity as-

sociated with interlobular septal thickening), focal consolidation, and linear consolidation, are the signs sought after in this context.

The data is collected on standardized pre-established forms using a questionnaire. Thus, we collected the characteristics of the individuals, the disease and the treatment modalities: Age, gender, performance status (PS), concomitant diseases, primary cancer site, cancer stage (metastatic or non-metastatic), sites of metastasis, current treatment and pathway, as well as the clinical and paraclinical symptomatology, and the management related to COVID-19. Data collection was carried out with respect for patient anonymity and the confidentiality of their information. It' has been coded in binary mode (0/1). Data entry and statistical analysis were performed using SPSS software. The descriptive analysis of the data involves transforming variables by either grouping using coding or conditional transformations. Descriptive analysis of the variables was conducted by calculating frequencies and measures of central tendency or dispersion, especially the mean.

3. Results

One hundred cancer patients were infected by the coronavirus and collected within our department during the period from March 2020, to march 2022. We collected 55 men and 45 women with a sex ratio of 1.2 (**Figure 1**). The average age of the patients was 56 years (22 - 91).

Regarding comorbidities, 49% of the patients had at least one medical comorbidity, with arterial hypertension in 27% of patients and diabetes in 8%, being the most prevalent (**Table 1**).

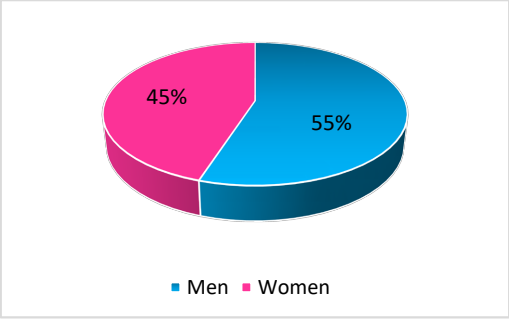

Figure 1. Distribution of cancer patients with COVID-19 by gender.

Table 1. Different comorbidities in our patients.

Comorbidities	Percentage %
Arterial hypertension	27
Cardiovascular diseases	4
Diabetes	8
Obesity	5
Asthma/ Chronic obstructive pulmonary disease (*COPD*)	3
Others	2

The most common type of cancer was breast cancer, present in 34% of patients, followed by digestive cancers, observed in 26%, then lung cancer in 16% and genitourinary cancers in 8% patients (Figure 2).

76% of patients presented a symptomatic form of COVID 19. The primary clinical manifestations linked to COVID-19 involve respiratory syndrome, specifically dry cough and dyspnea observed in 45% of patients. Fever was found in 38% of patients, diarrhea in 16% and 10% experienced anosmia. However, 24% of cases were asymptomatic (Figure 3).

Biological tests were systematically requested in all our patients included a complete blood count, C-reactive protein (CRP), blood electrolyte levels, and other analyses based on individual cases. The findings revealed that 34% of patients had leukoneutropenia, 10% exhibited neutrophilic leukocytosis, Lymphopenia was observed in 42% of patients, 62% had a positive CRP, 6% showed signs of renal insufficiency, and 4% had decreased prothrombin time (TP). D-dimer levels were positive in 17% of patients.

Covid-19 infection was diagnosed via CT scan in 62% of patients, while in 38 % of cases; the diagnosis was confirmed using PCR (Figure 4).

76% of patients had metastatic cancer at the time of COVID-19 diagnosis. 96% of patients were undergoing cancer treatment at the time of COVID-19 diagnosis, with 56% of patients receiving chemotherapy, 24% undergoing hormone therapy, 15% receiving targeted therapies, while 5% were under observation.

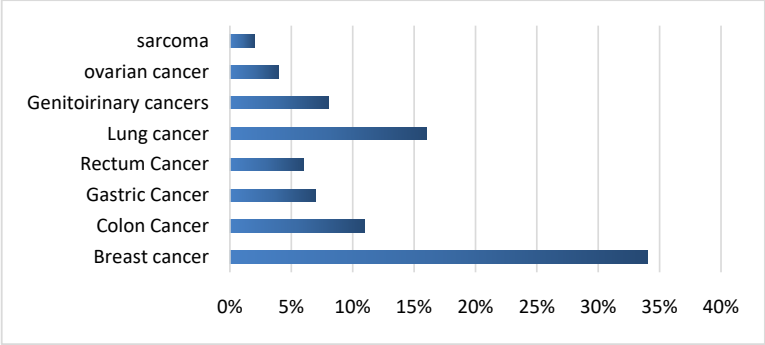

Figure 2. Distribution of cancer patients with COVID-19 by cancer site.

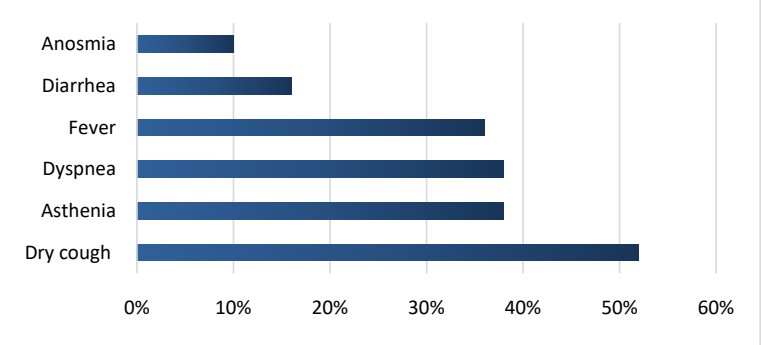

Figure 3. Distribution of cancer patients with COVID-19 according to clinical symptomatology.

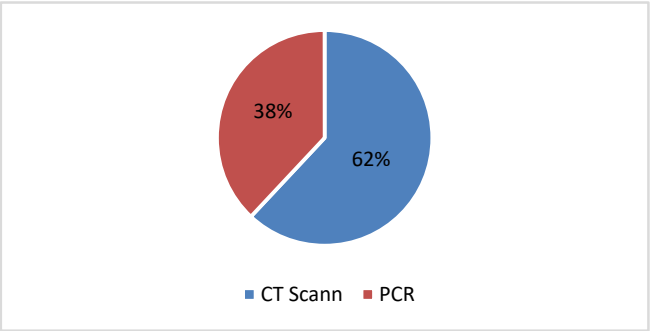

Figure 4. Diagnostic methods for COVID-19 infection.

64% of patients were treated on an outpatient basis, 20% required hospitalization in a medical ward, while 16% were directly admitted to the intensive care unit. The median length of hospital stay was 9.5 days.

All our patients were treated for COVID-19 following the therapeutic protocol approved by the Ministry of Health in Morocco. All patients, even those without symptoms, received vitamin therapy for 7 days, consisting of Vitamin C (2000 mg per day), Zinc (30 mg per day), paracetamol (3000 mg per day), and Vitamine D (Loading dose of Vitamin D upon COVID-19 diagnosis, for example, 100,000 IU of vitamin D3 orally). For symptomatic patients, Oxygen therapy was administered if the oxygen saturation level was below 94%, or below 90% in the case of COPD (Chronic Obstructive Pulmonary Disease). They received antibiotic treatment such as azithromycin (500 mg on the first day followed by 250 mg for four days). Only 25% of patients were administered chloroquine, 200 mg every eight hours for ten days, with strict cardiac monitoring (an ECG was conducted before treatment, then on Day 3, Day 5, and Day 11 of the treatment), and potassium level monitoring (potassium levels were checked before treatment and then every two days). All hospitalized patients received preventive anticoagulation. A follow-up CT scan was requested for all recovered patients two months after the end of the treatment.

The course of the disease showed recovery in 79% of patients, 12% of patients passed away within 20 days following the diagnosis of the COVID-19 infection, and 9% were lost to follow-up. All patients declared as recovered resumed their previous cancer treatments, with no further complications reported.

4. Discussion

The Coronavirus Disease 2019 (COVID-19) represents a global health issue with significant health, security, economic, and social implications [6]. The causative agent is SARS-CoV-2, a highly contagious strain that emerged in Wuhan, China, in December 2019 [1].

In Morocco, the first case of COVID-19 was reported on March 2, 2020, and the first death on March 11, 2020. As of March, 2022, a total of 1,163,012 confirmed cases were recorded out, 1,146,377 cases have been declared recovered and 6058 have died [7].

Cancer patients are at a high risk of developing a severe, even fatal, form of SARS-CoV-2 infection. A recent WHO updated report shows a mortality rate of 7.6% among cancer patients. Indeed, these patients are considered a highly vulnerable group compared to the general population due to their immunosuppressive state caused by malignancy, chemotherapy, and comorbidities.

In our Medical Oncology service, we have identified 100 cancer patients who tested positive for the coronavirus.

The average age in our series was 56 years, slightly lower than the age found in international studies, which exceeded 63 years; likely due to our overall very young Moroccan population [5] [8] [9] [10].

A male predominance was founded in our series with a sex ratio of 1.2 which is consistent with the results of the American-Chinese study that found a male predominance with a sex ratio of 1.2 [9].

For the comorbidities in our patients, arterial hypertension was founded in 27%, followed by diabetes in 8%. The same comorbidities were founded in various international studies with figures that align with ours, particularly in the study by Dai *et al.*, where arterial hypertension was found in 28.57% of cancer patients and diabetes in 6.67% [9]. Additionally, the study by Cai *et al.* reported arterial hypertension in 12.8% of patients and diabetes in 6.4% [11].

In our patients, infectious involvement was more pronounced in those with breast cancer (34%), followed by digestive cancers (26%), lung cancers (16%), and genitourinary cancers (8%). However, the majority of studies have found that patients with bronchial cancer are more vulnerable to developing this infection, due to the fragile pulmonary function caused by the tumor in these patients. Thus, Yu *et al.* found that 58.3% of cancer patients had bronchial cancer [8]; similarly, Zhang *et al.* reported 25% [10], and Liang *et al.* reported 28% [5]. In contrast, in the United States, Miyashita *et al.* found 17% of patients with breast cancer compared to 6.8% of patients with bronchial cancer [12].

We observed the presence of a respiratory syndrome in 45%, characterized by persistent dry cough and dyspnea, fever in 38%, diarrhea in 16%, and anosmia in 10% of patients. The majority of studies identify the respiratory syndrome as a major symptom of COVID-19 infection in this particularly vulnerable patient category. This is consistent with two international studies where this syndrome was founded in 47% and 52.29% of patients, respectively [5] [9]. The frequency of this syndrome is primarily linked to the pathogenesis of the SARS-CoV-2 virus.

The positive diagnosis of COVID-19 infection in our patients was established through a CT scan in 62% of cases and through PCR in 38% of cases. According to Zhu *et al.*, the positive diagnosis of COVID-19 is made through PCR and not through thoracic computed tomography [13]. This discrepancy could be explained by the fact that RT-PCR remains an expensive and less accessible test in our context compared to thoracic CT scanning. Nevertheless, many sources currently acknowledge that CT scan results are more sensitive than PCR in detecting COVID-19 infection [14] [15].

Due to the high frequency of routine thoracic imaging in the follow-up of cancer patients, incidental findings of COVID-19 infection are made. Typically, these patients are asymptomatic. In our series, 24% of our patients were asymptomatic and incidentally discovered during a routine thoracic CT scan. Several studies have demonstrated the contribution of imaging in the diagnosis of COVID-19, notably Albano *et al.*, where they discovered coronavirus infection in 7 out of 65 cancer patients examined by PET-CT scan, accounting for 10.7% [16].

In our study, 96% of the patients were undergoing oncological treatment. It is widely accepted that oncological treatments have immunosuppressive effects, making patients more vulnerable to infections. This high percentage was also observed in China, as all patients in the study by Yu *et al.* were undergoing oncological treatment [8]. In two other studies, only 25% and 28.5% of patients were undergoing oncological treatment [5] [10].

In our series, we followed the Moroccan therapeutic protocol, based on Chloroquine or Hydroxychloroquine and/or azithromycin for symptomatic patients. During this unprecedented crisis, several debates have taken place to define a therapeutic strategy to follow. Despite numerous clinical trials and scientific research efforts, no treatment has proven effective against SARS-CoV-2. Systemic steroids remain controversial in the treatment of viral pneumonia. The use of glucocorticoids in patients with SARS-CoV-2 infection, especially in those with severe illness including cancer patients, was a major point of controversy. The justification for their use is to reduce pulmonary inflammation as seen in ARDS. However, this comes with adverse effects such as inhibition of the immune response, thereby increasing the risk of secondary infections and delaying viral clearance [17]. 76% of our patients received antibiotic therapy. Similarly, in China, 77.14% of the patients were treated with antibiotic therapy [9]. Antivirals were not used in our patients due to their unavailability. However, in the same Chinese study, 71.43% of the patients were treated with antivirals [9].

The evolution in our patients was marked by recovery in 79%, 12% passed away. This result is consistent with the findings of the American-Chinese study, where the mortality rate was 11.43% [9]. Additionally, the American study reported a similar rate of 11.07% [11], and finally, the Italian study found a slightly higher rate at 16.5% [16]. This elevated mortality rate is primarily associated with the immunosuppression of cancer patients, who are unable to defend themselves effectively against pathogenic viruses such as SARS-CoV-2.

5. Conclusion

SARS-CoV-2 pandemic overwhelmed the healthcare systems of many countries. Cancer patients are known to be more vulnerable to infections. Indeed, we conclude that cancer patients might be more susceptible to SARS-CoV-2 infection and at a higher risk of developing severe events. This could result from a combination of factors, including demographic characteristics of patients and the

immunosuppressive effects caused by cancer itself, but anticancer treatments have not shown deleterious effects on the course of COVID-19. However, preventive measures should be taken to protect these patients from any contamination and to organize the continuity of care under the best possible conditions. The Moroccan expert panel of oncologists, proposed these recommendations for the management of cancer patients which had to take into account several parameters: It is necessary to prioritize the management (hospitalization if necessary) of patients with cancers undergoing curative treatment according to classical recommendations, followed by non-curative management at the beginning of treatment (first line) or in patients under 60 years of age and/or with a life expectancy greater than 5 years. To limit hospital visits, the use of oral treatments, home administrations, and even therapeutic breaks should be favored for patients undergoing non-curative treatment. Oncology services must be sanctuaries free of infected patients to minimize the risk of contamination for immunocompromised cancer patients. Provide priority COVID-19 vaccination to patients with cancer.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Wu, F., Zhao, S., Yu, B., Chen, Y.M., Wang, W., Song, Z.G., Hu, Y., Tao, Z.W., *et al.* (2020) A New Coronavirus Associated with Human Respiratory Disease in China. *Nature*, **579**, 265-269. https://doi.org/10.1038/s41586-020-2008-3

[2] Lu, R., Zhao, X., Li, J., Niu, P., Yang, B., Wu, H., *et al.* (2020) Genomic Characterisation and Epidemiology of 2019 Novel Coronavirus: Implications for Virus Origins and Receptor Binding. *Lancet*, **395**, 565-574. https://doi.org/10.1016/S0140-6736(20)30251-8

[3] WHO (2020) Coronavirus Disease (COVID-19) Pandemic. https://www.who.int/europe/emergencies/situations/covid-19

[4] Ministry of Health of Morocco (2020) Coronavirus Disease COVID-19: Situation Report. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200816-covid-19-sitrep-209.pdf

[5] Liang, W., Guan, W., Chen, R., *et al.* (2020) Cancer Patients in SARS-CoV-2 Infection: A Nationwide Analysis in China. *Lancet Oncology*, **21**, 335-337. https://doi.org/10.1016/S1470-2045(20)30096-6

[6] World Health Organization (2020) Director-General's Opening Remarks at the Media Briefing on COVID-19. https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020#:~:text=It%20doesn't%20change%20what,controlled%2C%20at%20the%20same%20time

[7] Ministry of Health of Morocco (2022) Le Portail Officiel du Coronavirus au Maroc. https://www.covidmaroc.ma/

[8] Yu, J., Ouyang, W., Chua, M.L. and Xie, C. (2020) SARS-CoV-2 Transmission in

Patients with Cancer at a Tertiary Care Hospital in Wuhan, China. *JAMA Oncology*, **6**, 1108-1110. https://doi.org/10.1101/2020.02.22.20025320

[9] Dai, M., Liu, D., Liu, M., Zhou, F., Li, G. and Xiong, Y. (2020) Patients with Cancer Appear More Vulnerable to SARS-COV-2: A Multicenter Study during the COVID-19 Outbreak. *Cancer Discovery*, **10**, 783-791. https://doi.org/10.1158/2159-8290.CD-20-0422

[10] Zhang, L., Zhu, F., Xie, L., Wang, C., Wang, J. and Peng, P. (2020) Clinical Characteristics of COVID-19-Infected Cancer Patients: A Retrospective Case Study in Three Hospitals within Wuhan, China. *Annals of Oncology*, **31**, 894-901. https://doi.org/10.1016/j.annonc.2020.03.296

[11] Cai, Q., Huang, D., Ou, P., Yu, H., Zhu, Z. and He, Q. (2020) COVID-19 in a Designated Infectious Diseases Hospital Outside Hubei Province, China. *Allergy*, **75**, 1742-1752. https://doi.org/10.1111/all.14309

[12] Miyashita, H., Mikami, T., Chopra, N., Yamada, T., Chernyavsky, S., Rizk, D. and Cruz, C. (2020) Do Patients with Cancer Have a Poorer Prognosis of COVID-19? An Experience in New York City. *Annals of Oncology*, **31**, 1088-1089. https://doi.org/10.1016/j.annonc.2020.04.006

[13] Zhu, W.J., Wang, J., He, X.H., Qin, Y., Yang, S, and Shi, Y.K. (2020) The Differential Diagnosis of Pulmonary Infiltrates in Cancer Patients during the Outbreak of the 2019 Novel Coronavirus Disease. *Chinese Journal of Oncology*, **42**, 305-311.

[14] Fang, Y., Zhang, H., Xie, J., Lin, M., Ying, L., Pang, P. and Ji, W. (2020) Sensitivity of Chest CT for COVID-19: Comparison to RTPCR. *Radiology*, **296**, E115-E117. https://doi.org/10.1148/radiol.2020200432

[15] Moujaess, E., Kourie, H.R. and Ghosn, M. (2020) Cancer Patients and Research during COVID-19 Pandemic: A Systematic Review of Current Evidence. *Critical Reviews in Oncology/Hematology*, **150**, Article ID: 102972. https://doi.org/10.1016/j.critrevonc.2020.102972

[16] Albano, D., Bertagna, F., Bertoli, M., Bosio, G., Lucchini, S. and Giubbini, R. (2020) Incidental Findings Suggestive of COVID-19 in Asymptomatic Patients Undergoing Nuclear Medicine Procedures in a Hig-Prevalence Region. *Journal of Nuclear Medicine*, **61**, 632-636. https://doi.org/10.2967/jnumed.120.246256

[17] Russell, C.D., Millar, J.E. and Baillie, J.K. (2020) Clinical Evidence Does Not Support Corticosteroid Treatment for 2019-nCoV Lung Injury. *Lancet*, **395**, 473-475. https://doi.org/10.1016/S0140-6736(20)30317-2