

IMPACT OF COVID19 INFECTION IN PATIENTS WITH CANCER

Ince Mohammed Norri¹, Zaid Ali Majeed Ahmed², Ali Adnan Jabbar³ and
Mahammad Shaker Jassim⁴

Al Muthanna University, College of Medicine, Department of Medicine,
C.A.B.M, MBChB^{1,3}

Al Muthanna University, College of Medicine, Department of Surgery,
A.B.H.S.g, MBChB²

Ministry of health Al-Hussien teaching hospital – Department of medical
M.B.CH.B- C.A.B.M⁴

Corresponding author:

Dr. Ince Mohammed Norri

C.A.B.M, MBChB

College of Medicine

dr.anas86@mu.edu.iq

00964773 137 0449

Abstract

Background: *coronaviral pandemic (COVID-19) induced by severe acute coronaviral syndrome 2 has imminent consequences for COVID-19 patients. To determine the effect of this pandemic on oncological treatment, Netherlands cancer patients performed a national study.*

Methods: *From 11 April 2020 to 11 Jan 2021, the oncological care perspective was discussed by an online study. The survey included 20 questions on four topics: patient characteristics, hospital engagement, COVID-19 and COVID-19 problems.*

Results: *A total of 2418 (64.53%) patients were female and the remainder (57.5%) were <50 years of age. The most prevalent cancer diagnosis were haematological malignancies (26.1%), breast cancer (22.8%) and other cancers (19.2%). Depending on their illness environment, 34.7% of patients had incurable conditions while 21.6% and 31.8% had curable or healed diseases. The (expected) result of their illness was 'unknown' for 11.9% of patients. According to outpatient environment, 1691 (45.1%) patients have been oncologically examined and have taken follow-up, contrasted with 529 (14.1%) and 1527 (40.8%) patients presently or pending for therapy.*

Conclusion: *This is the first research exploring cancer patients' experiences after the COVID-19 pandemic in Iraq. The research indicates the major effect of COVID-19 on oncological treatment, showing the need for psycho-oncological assistance during this pandemic.*

Key words: *COVID-19, cancer, patients.*

Introduction:

Coronaviruses belonging to great family of viruses that may cause mild to extreme disease conditions. Any coronaviruses are zoonotic and thus transmit from animals to human being. In December month of 2019, a novel coronavirus called SARS-CoV-2 that broke out in COVID-19. Characteristics signs of COVID-19 include the followings: fever, contaminants, respiratory and muscle discomfort. In 33 percent of COVID-19 incidents, serious disorders like acute respiratory depression, an acute kidney failure, acute lesions in respiratory system, septic shock as well as extreme pneumonia have been reported. Till now, there is no unique medicine or approved vaccine for infection with COVID-19, and clinical treatment includes the introduction primarily of prescribed infection prevention, management protocols and control of complications. Patient wellbeing care is offered, supporting treatment including hydration, oxygen therapy, pain management and fever control is administered, as well as antibiotics are prescribed for secondary infection with bacteria (International Pharmaceutical Federation, 2020).

Potential medicines such as remdesivir (developed medicines), immunoglobulins, arbidol hydrochloride in conjunction with interferon atomization, oseltamivir plus ASC09F, oseltamivir plus ritonavir, ritonavir plus lopinavir and some other medicines are presently being tested in several clinical trials, but no specific therapy or vaccine is still approved. In addition, chloroquine phosphate was shown to have adequate safety and demonstrate efficacy in the treatment of pneumonia consistent with COVID-19 (Gao *et al.*, 2020).

The high rate of severe infection in patients with cancer has been reported to raise by 3.5 times the likelihood of mechanical breathing, ICU admission or death in patients without cancer. Increased incidence of extreme COVID-19 effects in Cancer patients may be the cause of immunosuppression that triggered by malignancy as well as anticancer medications such as surgery or chemotherapy. Thirty days before COVID-19, patients undergoing chemotherapy or surgery were seen to have a greater probability of adverse accidents than patients without chemotherapy or procedures. The cancer experience has also been shown to be highest risk for serious complications and linked to lower COVID-19 findings. In fact, the patients with lung cancer mightn't have a great chance of severe serious complications as linked with other patients with cancers (Liang *et al.*, 2020).

Zhang *et al.* (2020) registered cough, fever, breath shortness, myalgia as well as diarrhea for the 57-year-old Chinese lung cancer patient, who subsequently screened positively for

COVID 19. The cancer of lung was firstly treated with gefitinib from 2016, February. Finally, the osimertinib monotherapy ongoing in 2017Sep. when the EGFR T790M resistance mutation was detected as the disorder developed. COVID-19 handled with lopinavir/ritonavir which is combination of inhibitors for protease. Three subsequent studies were shown to be negative for RT-PCR SARS-CoV-2, suggesting a treatment of patients with COVID-19. The case that documented, despite COVID-19 diagnosis, allowed continued osimertinib therapy to the patient's health and progress.

Wang and Zhang (2020) reported that the primary danger to cancer patients during the COVID-19 pandemic is inadequate access to the necessary health and disability in the timely provision of medical services, especially in high-risk epidemic areas such as China, Wuhan, where there is a strong need for health workers and facilities. Medical care professionals must be mindful of medication-related adverse reactions in patients with lung cancer therapy with an immune-check-point inhibitor (for example dangerous myocarditis as well as pneumonitis): these adverse effects will powerfully influence survival of the patients; therefore, the diagnosis and treatment of these disorders is important promptly.

In a recent retrospective cohort study, 28 COVID-19 confirmation patients in three hospitals in China (Wuhan city), were recruited to evaluate the hazard issues related with admission to ICU, mechanical ventilation and/or death. An analysis showed that the probability of adverse events and death from bad health conditions is large among COVID-19-infected cancer patients (Ueda *et al.*, 2020).

Cancer therapy was identified as a hazard issue for the extreme events within fourteen days of the diagnosis of COVID-19. The research population reports extreme complications as septic shock (3.6 percent), respiratory distress (28.6 percent), as well as myocardial infarction (3.6 percent). Remarkably, the percent 28.6 of the patients studied had a COVID-19 infections, mainly through nosocomial transmission. These studies stress the value of stringent infection management and care in an outpatient environment for cancer patients, rather than hospitalization where appropriate. This study's writers proposed that patients with cancer are already undergoing extensive COVID-19 monitoring and retarded COVID-19 immunosuppressive treatment (Zhang *et al.*, 2020).

Methods

Survey

The effect of the COVID-19 pandemic on medical appointments and cancer care was

measured in a study of cancer patients. The research included 20 questions on four topics: patients' features, therapeutic communication, COVID-19 effects (consultation, care and follow-up) and COVID-19 issues. The study was accessed via direct mail or social media to patients and the public. The survey was available from 11 April 2020 to 11 Jan 2021.

Results:

A total of 2418 (64.53%) patients were female and the remainder (57.5%) were <50 years of age. The most prevalent cancer diagnosis were haematological malignancies (26.1%), breast cancer (22.8%) and other cancers (19.2%). Depending on their illness environment, 34.7% of patients had incurable conditions while 21.6% and 31.8% had curable or healed diseases. The (expected) result of their illness was 'unknown' for 11.9% of patients. According to outpatient environment, 1691 (45.1%) patients have been oncologically examined and have taken follow-up, contrasted with 529 (14.1%) and 1527 (40.8%) patients presently or pending for therapy. (Table 1).

Table 1 Patients' characteristics.

Number	%	
Gender		
Females 2418	64.53	
Males 1329	35.47	
Age		
<50 years	2153	57.5
>50 years	1594	42.5
Disease setting		
Cured	1192	31.8
Curable disease	813	21.6
Incurable disease	1296	34.7
Unknown	446	11.9
Treatment situation		
treatment Awaiting	529	14.1
Under the treatment	1527	40.8
Follow-up	1691	45.1
Cancer diagnosis		
UT cancer	1273	33.5
Breast cancer	852	22.8
Brain tumor	8	0.2
Gastric cancer	85	2.3
Colorectal cancer	163	4.3
Gynaecological cancer	149	4
Haematological malignancy	986	26.1
Head and neck cancer	270	7.5

Lung cancer	375	10
Mesothelioma	210.5	
Melanoma and skin cancer	360.9	
Prostate cancer	1624.4	
Pancreatic cancer	26	0.7
Testicular cancer	120.3	
Sarcoma	20.05	
Other	71719.2	

Discussion

In several expert opinions, the effect of the pandemic of COVID-19 on the oncological therapy is a matter of serious concern among oncological physicians, especially as further COVID-19 outbreaks are predicted.

Many patients with curable illness continued unchanged care, although treatment of patients with an incurable disease was delayed more often. Patients with incurable disease were to be more worried about the COVID-19 pandemic and the possibility of SARS-CoV-2 contamination than patients with curable disease. These fears may be justified by the fear that the intensive care unit will not be accepted to the extreme COVID-19. This fear is reasonable because of the capability problems and stringent national standards for the care of patients with incurable malignant conditions that were supposed to be specific triage requirements (Zhang *et al.*, 2020).

Although the results of their oncological therapy or follow-up were more concerned with the patients handled in red code areas, absolute variations in geographic changes were marginal. These global changes may be formulated as the product of national guidance on oncology after the pandemic of COVID 19. To minimize the possibility of transmissions in hospital, treatment-related hospitalizations were reduced and the predicted capability challenges were planned. Furthermore, the absence of empirical data and protection issues for cancer care may have led to national treatment changes (Garassino *et al.*, 2020).

However, in patients with haematological malignancies the elevated fatality risk was close to that found in a UK and in a variety of Chinese cohorts (Yang *et al.*, 2020). However, this finding contrasts with the findings of an American cohort study which showed that COVID 19 mortality in haematologically malignant patients had not risen (Kuderer *et al.*, 2020).

Wide COVID-19 cancer cohorts with mainly solid organ tumors have shown that recent chemotherapy does not dramatically exceed the mortality risk. Eight, seventeen in this research, we observed that in patients with haematological malignancies, the risk seems to be elevated by recent (4 weeks or later) or current chemical care, close to findings in other cohorts (Tian *et al.*, 2020).

This finding may have many explanations, the immunological issues seen in leukaemia patients and the usage of myelosuppressive treatment schemes could contribute to a mixture of hazards, in terms of the likelihood of initial SARS-CoV-2, its potential to establish a foothold in the host, the downstream course of disease, and the probability of severe effects, such as cytokine storm and multi-organ failure. Therefore, it is necessary to further confirm these results and to further explore the potential triggers (Lee *et al.*, 2020).

Aging increases the incidences of both cancer and SARS-CoV-2 infection (Wang *et al.*, 2020). In addition, naive T cells are affected with aging by thymopoiesis and novel antigens (such as tumor-specific neoantigens) or infectious agents (such as SARS-CoV-2). This leaves older persons more susceptible to cancer and virus diseases and less likely, when contaminated with SARS-CoV-2 or particular vaccines, to develop immune responses (Clave *et al.*, 2018; Deng *et al.*, 2020).

Conclusion:

COVID 19 was occurred in women, and most patients were <50 years who suffered from haematological malignancies.

References:

Clave, E., Araujo, I. L., Alanio, C., Patin, E., Bergstedt, J., Urrutia, A., ... & Milieu Intérieur Consortium. (2018). Human thymopoiesis is influenced by a common genetic variant within the TCRA-TCRD locus. *Science translational medicine*, 10(457).

Deng, X., Gu, W., Federman, S., Du Plessis, L., Pybus, O. G., Faria, N. R., ... & Chiu, C. Y. (2020). Genomic surveillance reveals multiple introductions of SARS-CoV-2 into Northern California. *Science*, 369(6503), 582-587.

Gao, J., Tian, Z., & Yang, X. (2020). Breakthrough: Chloroquine phosphate has shown apparent efficacy in treatment of COVID-19 associated pneumonia in clinical studies. *Bioscience trends*.

Garassino, M. C., Whisenant, J. G., Huang, L. C., Trama, A., Torri, V., Agustoni, F., ... & Horn, L. (2020). COVID-19 in patients with thoracic malignancies

(TERAVOLT): first results of an international, registry-based, cohort study. *The Lancet Oncology*, 21(7), 914-922.

International Pharmaceutical Federation. Coronavirus SARS-CoV-2 outbreak: information and guidelines for pharmacists and the pharmacy workforce. February 12, 2020.

Kuderer NM Choueiri TK Shah DP et al. Clinical impact of COVID-19 on patients with cancer (CCC19): a cohort study. *Lancet*. 2020; 395: 1907-1918.

Lee, L. Y., Cazier, J. B., Starkey, T., Briggs, S. E., Arnold, R., Bisht, V., ... & Wyatt, S. (2020). COVID-19 prevalence and mortality in patients with cancer and the effect of primary tumour subtype and patient demographics: a prospective cohort study. *The lancet oncology*, 21(10), 1309-1316.

Liang, W., Guan, W., Chen, R., Wang, W., Li, J., Xu, K., ... & He, J. (2020). Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. *The lancet oncology*, 21(3), 335-337.

Tian, J., Yuan, X., Xiao, J., Zhong, Q., Yang, C., Liu, B., ... & Wang, Z. (2020). Clinical characteristics and risk factors associated with COVID-19 disease severity in patients with cancer in Wuhan, China: a multicentre, retrospective, cohort study. *The Lancet Oncology*, 21(7), 893-903.

Ueda, M., Martins, R., Hendrie, P. C., McDonnell, T., Crews, J. R., Wong, T. L., ... & Stewart, F. M. (2020). Managing cancer care during the COVID-19 pandemic: agility and collaboration toward a common goal. *Journal of the National Comprehensive Cancer Network*, 18(4), 366-369.

Wang, D. et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *J. Am. Med. Assoc.* **323**, 1061–1069 (2020).

Wang, H., & Zhang, L. (2020). Risk of COVID-19 for patients with cancer. *The Lancet Oncology*, 21(4), e181.

Yang K Sheng Y Huang C et al. Clinical characteristics, outcomes, and risk factors for mortality in patients with cancer and COVID-19 in Hubei, China: a multicentre, retrospective, cohort study. *Lancet Oncol.* 2020; 21: 904-913.

Zhang, H., Huang, Y., & Xie, C. (2020). The treatment and outcome of a lung cancer patient infected with SARS-CoV-2. *J. Thorac. Oncol. doi*, 10.

Zhang, L., Zhu, F., Xie, L., Wang, C., Wang, J., Chen, R., ... & Zhou, M. (2020). Clinical characteristics of COVID-19-infected cancer patients: a retrospective case study in three hospitals within Wuhan, China. *Annals of oncology*, 31(7), 894-901.

Zhang, X., Song, K., Tong, F., Fei, M., Guo, H., Lu, Z., ... & Zheng, C. (2020). First case of COVID-19 in a patient with multiple myeloma successfully treated with tocilizumab. *Blood advances*, 4(7), 1307.