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REVIEW ARTICLE

Prognosis of patients with oncological diseases who were affected by COVID-19

Pronóstico de pacientes con enfermedades oncológicas afectados por COVID-19

Prognóstico de pacientes com doenças oncológicas que foram acometidos por COVID-19

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Abstract

This study aimed to analyze the scientific evidence on the prognosis of people with oncological diseases who were affected by COVID-19. This is an integrative literature review based on the PICo strategy, carried out with 10 articles indexed in LILACS, SciELO, and MEDLINE databases, in April 2022. Of the 4679 studies, 10 articles were used because they were suitable for this review. It was evident that oncological patients have an unfavorable prognosis for COVID-19 due to immunosuppression, treatments, and comorbidities, and the pandemic affected oncological practice with delays and adaptations. Since COVID-19 is an emerging disease, it is necessary to understand its effect on oncological patients, as well as to encourage the development of continuous studies to improve the care and treatment of this immunosuppressed population.

Descriptors: COVID-19; Coronavirus; Medical Oncology; Neoplasms; Prognosis.

Resumén

El objetivo de este estudio fue analizar la evidencia científica sobre el pronóstico de las personas con enfermedades oncológicas afectadas por COVID-19. Se trata de una revisión integradora de la literatura basada en la estrategia PICo, realizada con 10 artículos indexados en las bases de datos LILACS, SciELO y MEDLINE, en abril de 2022. De los 4679 estudios, se utilizaron 10 artículos por ser adecuados para esta revisión. Se evidenció que los pacientes con cáncer tienen un pronóstico desfavorable en COVID-19 debido a la inmunosupresión, tratamientos y comorbilidades, además de que la pandemia afectó la práctica oncológica con retrasos y adaptaciones. Al ser el COVID-19 una enfermedad emergente, es necesario comprender su efecto en los pacientes con cáncer, así como incentivar el desarrollo de estudios continuos para mejorar la atención y el tratamiento de esta población inmunodeprimida.

Descriptores: COVID-19; Coronavirus; Neoplasias; Oncología Médica; Pronóstico.

Resumo

Objetivou-se analisar as evidências científicas sobre o prognóstico de pessoas com doenças oncológicas que foram acometidos pela COVID-19. Trata-se de revisão de literatura integrativa baseada na estratégia PICo, realizada com 10 artigos indexados nas bases de dados LILACS, SciELO e MEDLINE, em abril de 2022. Do quantitativo de 4679 estudos, 10 artigos foram utilizados pois se adequaram a esta revisão. Evidenciou-se que pacientes oncológicos têm um prognóstico desfavorável na COVID-19 devido à imunossupressão, tratamentos e comorbidades, além de que a pandemia afetou a prática oncológica com atrasos e adaptações. Sendo a COVID-19 uma doença emergente, faz-se necessário entender o seu efeito em pacientes oncológicos, bem como fomentar o desenvolvimento de estudos contínuos para melhorar o cuidado e tratamento dessa população imunossuprimida.

Descritores: COVID-19; Coronavirus; Neoplasias; Oncologia; Prognóstico.

Introduction

In Wuhan, Hubei province, China, in early December 2019, a new type of coronavirus unknown in humans emerged, characterized as an infectious disease caused by SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2). The World Health Organization (WHO) initially received information about cases of pneumonia of unidentified etiology and as investigations progressed, China confirmed the identification of the new coronavirus[1,2].

The disease, with clinical manifestations such as fever, cough, myalgia, fatigue, and dyspnea[3], had a sudden onset, accelerated dissemination, and high morbidity and mortality rates, spreading rapidly to the rest of the world and overloading all health systems[1].

Consequently, on 31 January 2020, the WHO characterized the situation as a Public Health Emergency of International Concern (PHEIC) due to the rapid spread of the virus between countries. On 11 March 2020, in response to the geographic spread of the virus and its widespread global transmission, the WHO officially declared the situation a pandemic, recognizing the significant impact the disease was having across the world[1,2].

The impact of COVID-19 currently presents itself as persistent after-effects in survivors, such as respiratory problems, deep fatigue, joint pain, brain fog, hair loss, heart palpitations, depression and anxiety, and difficulties with language, reasoning, and memory[1-3]. There is a need for long-term follow-up and rehabilitation services for survivors, as there is a possibility of multiorgan complications[3,4]. The ongoing transmission and epidemiology of COVID-19 are complex and evolving topics. Continued commitment and effort, constant adaptation, and global collaboration are required to keep the situation as mild as possible[5].

COVID-19 is divided into five severity classifications and can evolve in different ways, namely: 1) asymptomatic cases, 2) mild cases, 3) moderate cases, 4) severe cases, and 5) critical cases, characterized by Severe Acute Syndrome (SARS)[4], which is a condition that affects people of any age, presenting high fever, cough, and dyspnea, accompanied by other signs of severity. However, it is important to emphasize that not all people present typical symptoms, such as children, the elderly, immunosuppressed people, and those using antipyretics[5,6].

In Brazil, the challenges were even greater. Due to the context of great social inequality, with populations living in precarious housing and sanitation conditions, without systematic access to water, and in crowded conditions, little was known about the transmission characteristics of COVID-19. Furthermore, the pandemic hit the Brazilian population at a time of extreme vulnerability, with high unemployment rates, deep cuts in social policies, and intense and growing strangulation of investments in health and research. This situation highlighted the importance of a strong science and technology system in the country and a Unified Health System (SUS) that guarantees the universal right to health[7].

In COVID-19, the literature points out the risk factors responsible for the most serious outcomes, which are: advanced age, heart problems, uncontrolled arterial hypertension, diabetes mellitus, chronic kidney disease, high-risk pregnancy, severe obesity, liver problems or coagulopathies, smoking, chronic lung disease, moderate or severe asthma and people with compromised immunity, for example, cancer patients[8].

Cancer is a disease characterized by the invasive and uncontrolled development of malignant cells, resulting in the loss of normal characteristics and cellular functions. These cancerous cells can originate from one or more cells that have undergone genetic alterations and have several associated causes, including internal factors, such as genetic predisposition, and external factors, such as dietary habits, sexual behavior, excessive exposure to sunlight and chemicals, smoking, obesity, drug use, viral infections, alcoholism, and a sedentary lifestyle. Due to its malignant nature, cancer can spread to other regions of the body through metastasis, in which cancerous cells spread through the blood or lymphatic system and establish themselves in distant tissues, where they continue to proliferate and cause progressive damage[9,10].

Cancer patients, due to the suppression of the immune system caused by the mechanisms of the disease itself and severe systemic immunosuppression resulting from treatment, become extremely susceptible to COVID-19 and have a greater risk of developing severe forms, such as SARS[11–13]. The dysregulated immune response that the tumor establishes in the cancer patient already has a high potential for severity, and when associated with the COVID-19 condition, the impact on this immunosuppressed patient becomes unsustainable.

In this sense, cancer patients face additional challenges in their treatment during COVID-19, requiring a comprehensive reorganization of health services, including oncological care, involving readjustments in protocols, therapeutic spaces, and changes in medication and supply demands. As a result of this scenario, many non-urgent oncological treatment cases have been delayed or postponed due to social isolation[13,14].

In view of the above, it is essential to develop studies and research that encompass the theme to produce scientific evidence regarding the relationship between COVID-19 and oncological conditions, as this is a population at risk and requires special attention. Thus, this study aims to analyze the scientific evidence related to the prognosis of people with oncological diseases who have been affected by COVID-19.

Methodology

This is an Integrative Review (IR) of the literature, structured according to the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) checklist, consisting of six stages: 1) Elaboration of the guiding question, in a clear, specific, and relevant manner for the health field; 2) Search or sampling in the literature, when criteria and the process of selecting articles for analysis are established; 3) Definition of information/data collection, containing key information to be collected in the analyzed articles); 4) Evaluation/critical analysis of the studies, when the critical analysis of the studies is carried out, considering their rigor and characteristics, in addition to the

classification of evidence; 5) Discussion/interpretation of the results, a stage in which the synthesis and discussion of the main results are carried out, including a comparison with theoretical knowledge; and 6) Presentation of the review, which culminates in the preparation of the document that describes all the stages, in the best possible detail, and highlights the main findings[15,16].

The search and selection of studies took place in April 2022, carried out by three undergraduate medical researchers, and validated by a postgraduate researcher with a doctorate in progress, belonging to different institutions (public and private), distinctly and independently. The research question was elaborated according to the PICo strategy[17], considering the acronyms "P: Population" – People with oncological diseases; "I: Phenomenon of interest" – Prognosis; "Co: Context" – COVID-19 involvement. Given this, the following guiding question was obtained: "What is the prognosis of people with oncological diseases who were affected by COVID-19?".

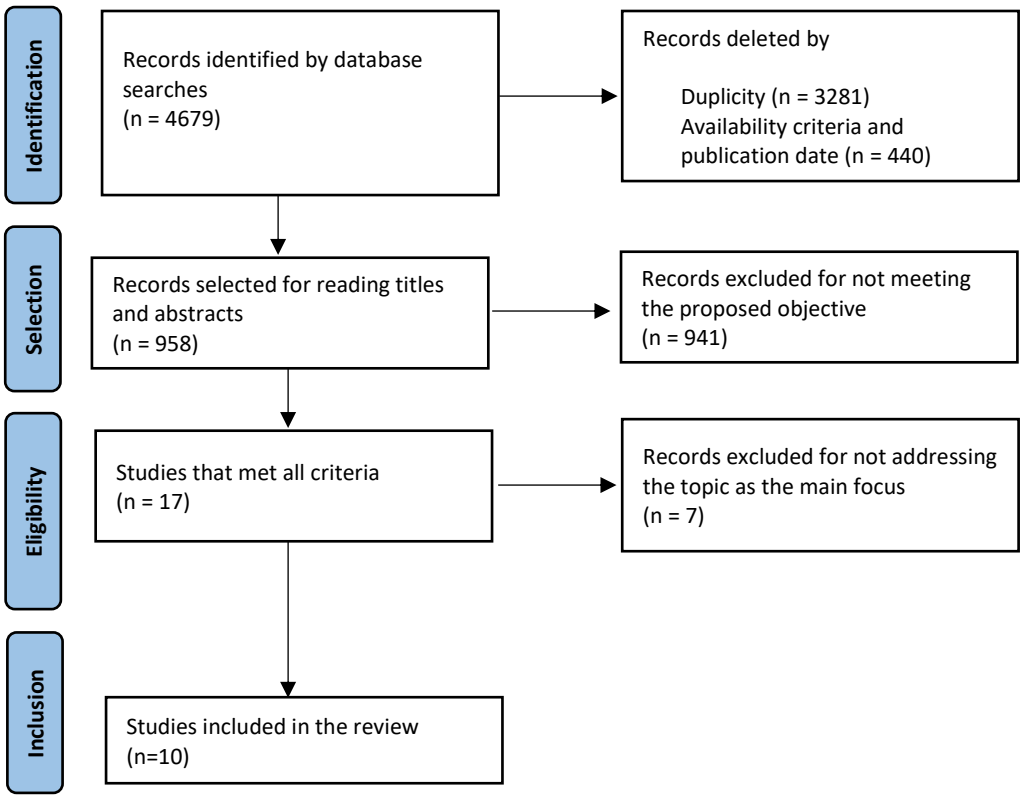
The search for scientific evidence occurred through virtual access to the following databases: Medical Literature Analysis and Retrieval System Online (MEDLINE), Web of Science, Latin American and Caribbean Literature in Health Sciences (LILACS), Scopus and Scientific Electronic Library Online (SciELO).

The inclusion criteria were studies relating oncology to COVID-19; original; freely available in full and from January 1, 2020, to March 30, 2022; in English, Portuguese, and Spanish. Literature reviews/reflections, editorials, abstracts of proceedings, dissertations, theses, and reports were excluded. Repeated content was considered only once.

The descriptors were used according to the Medical Subject Heading (MeSH) and their equivalents in the Portuguese language, established by the Health Sciences Descriptors (DeCS). The terms were combined using the Boolean operators "AND" and "OR" to compose the search strategies, developed for each database. The following terms were used: "COVID-19", "Coronavirus", "SARS-CoV-2", "Oncology", "Neoplasms" and "Prognosis".

There was no need for the research to be assessed by the Ethics Committee, as it was a review of previously published data. However, it should be noted that the study was conducted in a manner that maintained the required ethical precepts.

Figure 1. Identification and selection of articles. Maringá, PR, Brazil, 2022



The database search was conducted manually, initially resulting in 4,679 studies. In the first stage, filters were applied for free availability in full and publication date, leading to the exclusion of 440 records and exclusion due to duplication, excluding 3,281 records. Subsequently, the titles and abstracts of the 958 articles were read to identify the studies relevant to the theme proposed as an inclusion criterion, resulting in the exclusion of 941 records. Thus, 17 studies were selected for complete analysis and full reading, of which seven articles were excluded because they did not directly address the main theme. As a result, 10 articles were used in this integrative review (Figure 1).

Results

The summary of the publications selected for this review is presented in Chart 1, highlighting the author(s), year of publication, country, title, and results of interest.

Chart 1. Main characteristics of the selected articles, according to author, year, country, title and main results of interest. Maringá, PR, Brazil, 2022

Author/ Year/ Country	Tit6le	Objective	Type of study or Methodology	Results of interest
Harky et al[18]. 2020 United Kingdom	Cancer patient care during COVID-19	Address the challenges faced in cancer care during the COVID-19 pandemic, highlighting the risks of compromised care and increased susceptibility to the disease.	Editorial	It presented the two biggest risks for cancer, which are the commitment to "cancer care" and the great vulnerability to COVID-19.
Tokio Kawahara et al[19]. 2020 Brazil	Câncer e doenças cardiovasculares na Pandemia de COVID-19	Assess the risks and benefits of carrying out therapeutic and diagnostic interventions with individualized attention, considering the oncological prognosis and the risk of COVID-19 contagion.	Descriptive	It assessed the risks and benefits of carrying out therapeutic and diagnostic interventions with individualized attention, considering the oncological prognosis and the risk of COVID-19 contagion.
Assaad et al[20]. 2020 France	High mortality rate in cancer patients with symptoms of COVID-19 with or without detectable SARS-COV-2 on RT-PCR	Investigate how the pandemic impacted cancer patients' access to treatment, possible delays in diagnosis and initial treatment, as well as the risk of serious complications for these patients during this period.	Cohort	A high 30-day mortality rate was observed among patients with cancer and SARS-COV-2.
Insuasty-Enríquez et al[21]. 2020 Colombia	Cancer in the COVID-19 pandemic	Investigate the adaptation and knowledge regarding oncology services through experience with countries heavily affected by COVID-19.	Cohort	Identified knowledge about oncology services through experience with countries heavily affected by COVID-19.
Mary L. Disis.[22] 2020 United States	Oncology and COVID-19	Discuss the adversities experienced by people undergoing cancer treatment during the pandemic.	Opinion	It demonstrated the vulnerability and slowness of oncological care due to COVID-19.
Assaad et al[23]. 2020 France	Risk of death of patients with cancer presenting with severe symptoms of infection, with or without documented COVID-19: In reply to van Dam et al.	Perform an analysis of the clinical particularities and survival rate of individuals diagnosed with cancer who showed signs of COVID-19 infection.	Transversal	Determined the increased impact on the survival rate of cancer patients with COVID-19.
Baffert et al[24]. 2020 France	Quality of life of patients with cancer during the COVID-19 pandemic	Assess anxiety levels and quality of life in cancer patients treated in a day hospital during the COVID-19 pandemic, in addition to analyzing medical care management and its non-psychological consequences.	Cohort	It showed a preserved health-related quality of life and low anxiety of cancer patients during the COVID-19 pandemic.
Vela-Ruiz et al[25]. 2020 Peru	Desafíos en la atención de los pacientes con cáncer durante la pandemia COVID-19	Investigate how the COVID-19 pandemic has affected the treatment of cancer patients in health centers in Lima, Peru, examining treatment rescheduling, incidence of COVID-19 among these patients, and protective measures adopted.	Cohort	It is recommended to seek a balance between unnecessary patient exposures and unjustified therapeutic delays; a strategy that would offer an exceptional opportunity to continue appropriate patient care.
Beypinar Ismail[26]. 2021 Turkey	The effect of COVID-19 on oncology practice in Turkey	Assess how the COVID-19 pandemic has affected the daily practice of Turkish oncologists, considering changes in hospital facilities, task assignments in COVID-19 services, disruptions in oncology practice, and the need for patient referrals to other clinics due to the pandemic.	Transversal	The prolonged pandemic situation may harm oncology practice through loss of motivation of oncologists and incomplete multidisciplinary management of patients.
Knutson et al[27]. 2021 United States	Radiation oncology physics coverage during the COVID-19 pandemic: successes and lessons learned	Share lessons learned during the COVID-19 pandemic in the radiation oncology department, highlighting adaptations made to ensure continued high-quality patient care while minimizing the risk of exposure to the virus for patients and staff.	Transversal	The radiology service was reorganized and ensured the continuity of radiological care during the COVID-19 pandemic.

All studies selected for this review were freely accessible and free of charge for reading. Regarding the methodological design, cohort (n=4) and cross-sectional (n=3) studies predominated; no studies with qualitative methodology were selected. Regarding the country where the studies were conducted, the selection resulted in diverse regions, namely: five countries in the Americas and five countries in Europe. The main results are presented in Chart 1.

Discussion

The current scenario of the repercussions of COVID-19 makes studies that analyze the prognosis of the disease in patients with already established conditions, such as oncological diseases, extremely relevant. This review aims to analyze the scientific evidence available in the literature on the prognosis of oncological patients affected by COVID-19.

Coping with COVID-19 in people with cancer has been a significant concern due to their vulnerability to serious complications from the disease. Since the beginning of the pandemic, efforts have been directed to protect this population, given the immunosuppression resulting from cancer treatment. In addition to social distancing strategies, use of masks, and frequent hand hygiene, vaccination was prioritized for individuals with cancer, recognizing their high susceptibility to complications from COVID-19[11].

The findings of this research unequivocally suggest that cancer patients are considered an evident risk group, generally presenting an unfavorable prognosis in the context of COVID-19[19,28]. Such individuals show greater susceptibility to SARS-CoV-2 infection, with a significant propensity to develop severe forms of the disease, and face a high risk of mortality compared to non-cancer patients. This susceptibility is probably attributed to systemic immunosuppression resulting from treatment, whether chemotherapy, radiotherapy, or other therapies adopted, in addition to the neoplasia itself[11–13,28,29]. They had this risk increased due to underlying comorbidities, increasing their susceptibility to developing COVID-19 in its most severe form, as they already showed impairment of their body's functions, requiring immediate intervention and effective treatment measures.

Studies have shown that patients with cancer and COVID-19 had a significantly higher 30-day all-cause mortality rate than those without cancer[9,19-23]. Mortality was affected by general risk factors, such as older age, male sex, smoking, and the presence of comorbidities. In addition, risk factors specific to cancer patients, such as active cancer and receipt of certain medications, were also associated with an increased risk of mortality[9,19-23,28,30,31].

However, despite efforts to mitigate the spread of COVID-19, people with cancer have still struggled to receive standard medical services due to the declaration of a health emergency in many countries. Treatment interruptions or delays due to hospital restrictions and concerns about infection risk can negatively impact disease control and quality of life for these patients. In addition, the burden on the healthcare system due to COVID-19 may limit access to essential medical care for cancer patients, further exacerbating the situation[22].

Such interruptions resulted in delays in treatment and rescheduling of medical examinations, diagnostic studies, and procedures[11–14,22,24,25]. Although many services have adapted to changes in the management of cancer patients, the long duration of the pandemic has harmed the motivation of professionals and the multidisciplinary management of patients[11,26]. Given these challenges, a multidisciplinary approach involving oncologists, infectious disease specialists, and mental health professionals is crucial to ensuring that people with cancer are cared for appropriately during the pandemic. This includes implementing strict safety measures in treatment centers, adapting treatment strategies to minimize the risk of infection, and providing emotional and psychological support to cope with the additional stress caused by COVID-19. Collaboration across health sectors is essential to protect and care for this vulnerable population during this challenging time[24].

The lack of knowledge about how to manage the changes imposed by the COVID-19 pandemic in the routine care of cancer patients was better addressed by those who had family and spiritual support[32]. The changes made in the management of oncological treatment were important elements in reorganizing care practices in the event of new health crises[33]. Quality of life in people with cancer coping with COVID-19 has become a central concern, as the pandemic has exacerbated the physical, emotional, and social challenges faced by these patients[24]. In addition to the direct impacts of the disease, such as respiratory complications and increased susceptibility to infections, restrictions imposed by the pandemic, such as the postponement of non-urgent treatments, have adversely affected the quality of life of these individuals. Uncertainty regarding continued access to health care and concern about the risk of infection may have contributed to stress and anxiety, impacting the mental health and overall well-being of cancer patients[24,25].

In this context, a holistic approach that considers not only the clinical aspects of the disease but also emotional, social, and spiritual support is essential to promote a better quality of life during this challenging period.

Conclusion

The use of an integrative review allowed us to identify that cancer patients infected with COVID-19 face increased mortality risks compared to non-cancer patients, due to various causes and risk factors, with cancer-specific factors playing a relevant role. It can be observed that cancer treatment must be individualized and directed to therapeutic needs and possibilities since these were affected during the pandemic period. This information is essential to foster discussions between physicians and patients about the prognosis of COVID-19 in cancer patients, as well as to guide health policies that aim to optimize the management of these challenging cases. Continued monitoring and future studies are needed to improve our understanding of these

effects and provide more effective medical care for this vulnerable population.

The limitations of this study may be related to therapeutic generalizations since the studies included in this review comprised different scenarios, the limited availability of data, since relevant paid articles were not included, and the quality of the studies since the selected articles were independent of the impact factor of the published journal.

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