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Dental care needs in cancer patients during COVID-19 pandemic - a review

Necessidades de atendimento odontológico em pacientes com câncer durante a pandemia de COVID-19 - uma revisão

Necesidades de atención dental en pacientes con cáncer durante la pandemia COVID-19 - una revisión

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Abstract

The risk of contamination by SARS-Cov-2 from cancer patients is high due to immunosuppression. The aim of this study is to investigate evidence that demonstrates the treatment needs related to the main diseases that manifest in the oral cavity and also, the fundamentals that support dental care protocols in cancer patients during the COVID-19 pandemic. The study is characterized as a literature review. Search for articles which have been published in Lilacs, PubMed, Scopus and Web of Science databases. The included articles were presented in the English language and addressed the risk and association among COVID-19, cancer and their oral complications, with recommendations for management and treatment of these patients during outbreak times. In addition to the review, studies about oral complications from antineoplastic therapy were also included. 386 studies about cancer, COVID-19 and dental care were considered in the data base. After applying the inclusion and exclusion criteria, 45 articles were considered. Besides articles involving COVID-19, 31 articles involving oral complications from antineoplastic therapy and possible associations between cancer and oral cavity were included. The results revealed that the main oral diseases in cancer patients were mucositis, xerostomia and periodontal disease. Oral complications may be related to a worse evolution of COVID-19. For the management of oral complications, the dentist must be included in the interdisciplinary team to develop strategies for prevention and promotion of oral health. Dental care is crucial to prevent and treat oral lesions resulting from cancer treatment that can affect the prognosis of COVID-19.

Keywords: Cancer; Coronavirus; COVID-19; Dental care; Oncology.

Resumo

O risco de contaminação por SARS-Cov-2 em pacientes com câncer é alto devido à imunossupressão. O objetivo do estudo é investigar evidências que demonstrem as

necessidades de tratamento relacionados às principais doenças que se manifestam na cavidade bucal e também, os fundamentos que suportam os protocolos de atendimento odontológico em pacientes com câncer durante a pandemia de COVID-19. Foram pesquisados artigos publicados nas bases de dados Lilacs, PubMed, Scopus e Web of Science. Os artigos incluídos foram apresentados na língua inglesa e abordaram o risco e associação entre COVID-19, câncer e suas complicações orais, com recomendações para manejo e tratamento desses pacientes durante o período de pandemia. Além disso, também foram incluídos estudos sobre complicações orais decorrentes da terapia antineoplásica. 386 estudos sobre câncer, COVID-19 e atendimento odontológico foram considerados no banco de dados. Após aplicação dos critérios de inclusão e exclusão, foram incluídos 45 artigos. Além dos artigos envolvendo COVID-19, foram incluídos 31 artigos envolvendo complicações orais da terapia antineoplásica e possíveis associações entre câncer e cavidade oral. Os resultados revelaram que as principais doenças bucais nos pacientes com câncer foram mucosite, xerostomia e doença periodontal. As complicações bucais podem estar relacionadas a uma pior evolução do COVID-19. Para o manejo das complicações bucais, o cirurgião dentista deve estar incluído na equipe de interdisciplinar para desenvolver estratégias de prevenção e promoção de saúde bucal. A assistência odontológica é crucial para prevenir e tratar lesões orais decorrentes do tratamento do câncer que podem afetar o prognóstico da COVID-19.

Palavras-chave: Câncer; Coronavírus; COVID-19; Cuidado dental; Oncologia.

Resumen

El riesgo de contaminación por SARS-Cov-2 de pacientes con cáncer es alto debido a la inmunosupresión. El objetivo del estudio es investigar la evidencia científica que demuestre las necesidades de tratamiento relacionadas con las principales enfermedades que se manifiestan en la cavidad bucal y también, los fundamentos que sustentan los protocolos de atención odontológica en pacientes con cáncer durante la pandemia de COVID-19. El estudio se caracteriza por ser una revisión de la literatura. Busque artículos publicados en las bases de datos Lilacs, PubMed, Scopus y Web of Science. Los artículos incluidos se presentaron en inglés y abordaron el riesgo y la asociación entre el COVID-19, el cáncer y sus complicaciones orales, con recomendaciones para el manejo y tratamiento de estos pacientes durante los brotes. Además de la revisión, también se incluyeron estudios sobre complicaciones orales de la terapia antineoplásica. Se consideraron 386 estudios sobre cáncer, COVID-19 y cuidado dental en la base de datos. Después de aplicar los criterios de inclusión y exclusión, se consideraron 45 artículos. Además de los artículos relacionados con COVID-

19, se incluyeron 31 artículos relacionados con las complicaciones orales de la terapia antineoplásica y las posibles asociaciones entre el cáncer y la cavidad oral. Los resultados revelaron que las principales enfermedades bucales de los pacientes con cáncer eran la mucositis, la sequedad de boca y la enfermedad periodontal. Las complicaciones orales pueden estar relacionadas con una peor evolución de COVID-19. Para el manejo de las complicaciones bucales, el cirujano dentista debe estar incluido en el equipo interdisciplinario para desarrollar estrategias de prevención y promoción de la salud bucal. El cuidado dental es crucial para prevenir y tratar las lesiones bucales resultantes del tratamiento del cáncer que pueden afectar el pronóstico de COVID-19.

Palabras clave: Cáncer; Coronavirus; COVID-19; Cuidado dental; Oncología.

1. Introduction

Coronavirus disease outbreak in 2019 (COVID-19) was recognized by the World Health Organization (WHO) in December of 2019 as a public health emergency. The onset of the disease was marked in China and the epidemic has already been declared in 115 countries, with more than 100,000 related cases, reporting more than 4,000 deaths by March 14, 2020. On March 11, 2020, the WHO considered the disease as a pandemic. In addition to the difficulty in containing the spread of COVID-19, a major challenge was the hospital administration of infected patients. Even though they have not been isolated on the front lines to fight the disease, oncologists have ended up being affected by this worldwide situation (Achard, Tsoutsou, & Zilli, 2020).

Cancer (CA) patients are more susceptible to contracting some type of infection, due to systemic immunosuppression that occurs due to cancer treatments, such as radiotherapy or chemotherapy. With more vulnerable health condition, these patients have increased risk of COVID-19 and a worse prognosis. Liang et al., 2020, reported a greater presence of serious events such as deaths or admissions to the Intensive Care Units (ICU), requiring treatments such as mechanical ventilation for patients with history of CA when compared to patients who do not have CA and who were hospitalized with COVID-19.

Furthermore, CA, antineoplastic therapy and COVID-19 may affect the oral cavity (Elad et al., 2017; Ritwik, 2018). On the order hand, there are signs that the oral condition may modify the susceptibility and severity of these systemic diseases (Ritwik, 2018; Xu et al., 2020). The association among CA, COVID-19 and oral diseases is worrisome. In addition to that, study has shown that bacteria and oral inflammation can actively participate in

carcinogenesis (Whitmore & Lamont, 2014). The aim of this study is to review the literature and search for evidence to support requirements of oral attendance, understanding oral disease and protocols of dental care in cancer patients during COVID-19 pandemic.

2. Methodology

This is a narrative literature review study. These are reviews that synthesize a subject without a specific or previously declared methodology. It does not apply sophisticated and exhaustive search strategies. Narrative reviews are useful when answering broad questions (Franco, Arancibia, Simancas-Racines, & Madrid, 2018). A literature research on Lilacs, PubMed, Scopus and Web of Science data base was performed by two researchers on April to November 2020, with a combination of the search terms [Coronavirus OR COVID-19 OR 2019-nCOV OR nCoV OR 2019 novel coronavirus OR SARS-CoV-2] AND [Cancer OR Oncology OR Oncological patients] and the search terms [Coronavirus OR COVID-19 OR 2019-ncov OR nCoV OR 2019 novel coronavirus OR SARS-CoV-2] AND [Dental care OR Dentistry OR Dentist OR Oral medicine OR Dental hospital]. Additional articles were researched by screening the reference lists of the included studies.

To be included in the final review, the articles must be presented in English and discuss the risk and association between CA and COVID-19 infection, particularities of the management and treatment of oncological patients and particularities of the dental care (DC) during times of coronavirus. Considering the urgency and the novelty of the theme, all articles on the subject were encompassed, including guidelines and brief communications. Studies related to specific types of CA, such as lung and colorectal, focusing on diagnosis and complications have been excluded. Independent reviewer screened the titles and abstracts according to these eligibility criteria.

Furthermore, scientific articles about oral diseases and oral complications related to antineoplastic therapies were also sought. The literature on COVID-19 is still recent and scarce considering oral complications. Thus, articles on this subject were searched for in the last 10 years, in English, with preference to systematic reviews.

3. Results and Discussion

CA patients and requirements of oral attendance

Although COVID-19 and non-COVID patients should be treated fairly in a situation of emergency (Joebges & Biller-Andorno, 2020), CA patients should receive special attention during COVID-19 pandemic. It is believed that these patients are at high risk of respiratory complications from SARS-Cov-2 infection, due to the state of immunosuppression caused by CA therapies (Achard et al., 2020; Burki (2020a); Desai, Sachdeva, Parekh, & Desai, 2020; Jazieh et al., 2020; Kutikov et al., 2020; Liang et al., 2020; Yang, Li, Wang, & National Clinical Research Center for Child Health and Disorders and Children's Oncology Committee of Chinese Research Hospital Association, 2020; Yang, Zhang, & Yang, 2020; You et al., 2020; Yu, Ouyang, Chua, & Xie, 2020; Zhang et al., 2020). However, other factors should be considered when assessing the susceptibility of the CA patient, such as advanced age, use of tobacco, location of tumor involvement and other associated comorbidities (Falandry, Filteau, Ravot, & Le Saux, 2020; Lambertini et al., 2020; Liang et al., 2020; Mussetti et al., 2020; Ueda et al., 2020; Wang, Wang, & He, 2020; Wei et al., 2020; Xia, Jin, Zhao, Li, & Shen, 2020). In addition, the decrease in immunity in these patients can be considered a factor in triggering the aggravation of oral lesions due to the change in routine and antineoplastic treatment due to social isolation, a situation proposed as the best way to prevent viral transmission (Guo, Yuan, & Wei, 2020).

Thus, the dentist has a fundamental role in monitoring these patients, tracking possible signs and symptoms of oral lesions. The contact with the patient, through the use of tele-dentistry, has been used in several countries and can be of great aid in times of pandemic of COVID-19. These actions can prevent unnecessary exposure of the patient either by going to the dental office or to the hospital (Dave, Seoudi, & Coulthard, 2020). Moreover, it reduces the dentist exposure and patients to dental interventions, that are considered of high risk because they are in close contact with the patient's face, saliva exposure, and generation of aerosols, both being exposed to cross infection (Alharbi, Alharbi, & Alqaidi, 2020; Ather, Patel, Ruparel, Diogenes, & Hargreaves, 2020; Coulthard, 2020; Dave et al., 2020; Edwards, Kasten, Nelson, Elner, & McKean, 2020; Guo et al., 2020; Peng et al., 2020; Spagnuolo, De Vito, Rengo, & Tatullo, 2020; Yang, Soh et al., 2020). Despite the decrease in exposure, the multi-professional team, including the dentist, must strictly maintain the entire hygiene protocol and the constant use of personal protective equipment at all hospital sectors,

maintaining the patients and the staff safety, preventing viral spread (Ather et al., 2020; Bouffet et al., 2020; Coulthard, 2020; Dave et al., 2020; Edwards et al., 2020; Filippi, Russi, Magrini, & Corvò, 2020; Loftus, Dexter, Parra, & Brown, 2020; Meng, Hua, & Bian, 2020; Motlagh et al., 2020; Peng et al., 2020; Pino, Perez, Cardona, & Triana, 2020; Porzio et al., 2020; Shankar et al., 2020; Spagnuolo et al., 2020; Yang, Li et al., 2020; Yang, Zhang et al., 2020; Yang, Soh et al., 2020; You et al., 2020).

For CA therapy, measures to preserve these patients are encouraged, such as postponing appointments, clinical and elective procedures (Achard et al., 2020; Bouffet et al., 2020; Burki (2020a, 2020b); Cortiula, Pettke, Bartoletti, Puglisi, & Helleday, 2020; Hanna, Evans, & Booth, 2020; Kotecha, 2020; Lambertini et al., 2020; Liang et al., 2020; Motlagh et al., 2020; Mussetti et al., 2020; Salako et al., 2020; Ueda et al., 2020; Yang, Zhang et al., 2020; You et al, 2020; Yu et al., 2020). In addition, it was suggested that for non-urgent patients, treatment should also be postponed (Filippi et al., 2020; Lambertini et al., 2020; Liang et al., 2020; Pino et al., 2020; Shankar et al., 2020; Wang et al., 2020; You et al., 2020), although this postponement of CA treatment can lead to tumor progression and, consequently, worsen the disease prognosis (Burki (2020b); Cortiula et al., 2020; Hanna et al., 2020; Kotecha, 2020; Kutikov et al., 2020; Lambertini et al., 2020; Salako et al., 2020; Wang et al., 2020; Wang & Zhang, 2020; Zhang et al., 2020). These measures also apply to dental management, since actions allow the monitoring of these patients at home environment should be used whenever possible. In this scenario, the use of virtual technologies is highlighted, since dental appointments are replaced by telephone calls, text messages and e-mail. The main purpose of tele-dentistry is to track possible oral complications from antineoplastic therapy and provide oral hygiene guidelines in order to avoid breaking social isolation by going to treatment centers (Burki (2020b); Dave et al., 2020; Edwards et al., 2020; Guo et al., 2020).

Some authors state that urgent and/or emergency dental procedures should be performed and elective procedures should be postponed or suspended (Alharbi et al., 2020; Coulthard, 2020; Dave et al., 2020; Edwards et al., 2020; Meng et al., 2020; Spagnuolo et al., 2020; Yang, Soh et al., 2020). If the patient undergoing antineoplastic treatment needs urgent DC, one of the strategies to control COVID-19 infection in both patients and family members who accompany him is performing a screening before allowing entry (Ather et al, 2020; Guo et al, 2020; Machado, de Souza, Oliveira, Martelli Júnior, & Bonan, 2020; Meng et al., 2020; Peng et al, 2020; Spagnuolo et al., 2020; Yang, Soh et al., 2020). In addition, logistical measures must be adopted so that this patient and his family members do not have contact

with patients under suspicion or with confirmed diagnosis of COVID-19 (Bouffet et al., 2020; Burki (2020b); Filippi et al., 2020; Hanna et al., 2020; Pino et al., 2020; Porzio et al., 2020; Ueda et al., 2020; Yang, Li et al., 2020; Zhang et al., 2020).

Understanding oral disease in CA patients to act during the pandemic

Oral diseases are disorders in CA patients, especially opportunistic and autoimmune disorders. The greater susceptibility is caused by the immune function disorder generated by chemotherapy and radiotherapy. The most common oral diseases that attack CA patients are: oral mucositis, xerostomia, trismus, osteoradionecrosis, dysphagia, opportunistic bacterial, viral and fungal infections (Carneiro-Neto, de-Menezes, Moura, Massucato, & de-Andrade, 2017; Ritwik, 2018; Villa & Akintoye, 2018).

In addition to the aforementioned worsening complications in these patients, such as oral mucositis, the development of these lesions results in greater difficulty in cleaning, pain and burning, aggravated by radio-induced xerostomia, and worsening quality of life (Ahadian, Yassaei, Bouzarjomehri, Ghaffari Targhi, & Kheirollahi, 2017; Carvalho, Medeiros-Filho, & Ferreira, 2018).

It is important to understand that the mouth is a vessel of more than 1,200 different types of microbes (Dewhirst et al., 2010). Patients with CA diagnostics and receiving cancer therapy could present oral disbiose (La Rosa et al., 2020) with higher incidence of oral infection, which can represent an important infection focus in terms of morbidity for these patients.

Furthermore, there are chronic oral diseases that have a higher incidence in patients with CA. Among them, periodontal disease needs to be highlighted, which may have a systemic repercussion. In periodontitis, there is an increased release of inflammatory cytokines with systemic inflammation (Cardoso, Reis, & Manzanares-Céspedes, 2018; Fabri, 2020). In addition to that, an important bacteremia can occur in the presence of periodontal disease. Then, it can impact systemic conditions, aggravating it and/or hamper the therapeutics strategies (Cestari et al., 2016; Fabri et al., 2014; Fabri et al., 2015; Rolim et al., 2014; Savioli et al., 2012). COVID-19 by immune dysregulation, possibly, could modify the periodontal condition (Fabri, 2020). Therefore, studies to understand better the dental treatment needs of CA patients are crucial. Once we gather more scientific evidence on this topic, decision making during the pandemic will be more effective and safer.

Protocols of DC in CA patients during COVID-19 pandemic

Was the most suitable substance Regarding the patient's oral disinfection methods, mouthwash with 0.2% iodine-povidone or 0.5% to 1% hydrogen peroxide is recommended in order to decrease the salivary viral load, since they have greater effectiveness than other substances, due to its oxidative character (Alharbi et al., 2020; Ather et al., 2020; Guo et al., 2020; Loftus et al., 2020; Peng et al., 2020). This change should affect the mouthwash indication for CA patients during the coronavirus pandemic, since chlorhexidine in concentrations ranging from 0.12% to 0.2% for disinfection in patients undergoing radiotherapy (Carneiro-Neto et al., 2017; Hong et al., 2018). Thus, the maintenance of oral hygiene in these individuals must be kept, since its worsening leads to the growth in the rate of gingival inflammation, contributing to immunity decrease, already compromised by antineoplastic treatment, and decreased survival possibility (Farquhar et al., 2017; Ferreira, Dias-Pereira, Branco-de-Almeida, Martins, & Paiva, 2017).

About control and treatment of common oral disease in CA patients in times of COVID-19, it is proposed that the diagnosis should be made based on clinical manifestations and detailed anamnesis. It is indicated that, whenever possible, the biopsy should be performed later, after controlling the outbreak, in addition to avoiding microbiological smears and bacterial culture examination. For the treatment of injuries, when applicable, drug therapy is mainly indicated to cease the pain, to keep preservation and to postpone the intervention, with the support of tele-dentistry (Guo et al., 2020). However, if intervention is required, the number of dentists exposed to care should be limited and a more conservative approach should always be considered (Edwards et al., 2020). In the case of patients who require extensive interventions, with malignant tumors or chronic infections, it is indicated that a complete blood test should be performed prior to the procedure (Ather et al., 2020; Meng et al., 2020; Yang, Soh et al., 2020), along with chest X-ray examination and COVID-19 test.

Whenever possible, DC at a dental clinic should be prioritized, since in hospitals there is greater possibility of contact with infected people (Boev & Kiss, 2017). Due to this, in hospitals, patients must be submitted to prior screening, which can be done by phone call, in order to identify suspect and confirmed cases, by asking them questions about exposure to infected people, respiratory manifestations and travel history. Positive screening should result in postponement of dental procedures, with incentive to quarantine and specialized medical care (Alharbi et al., 2020; Ather et al., 2020). However, since there is a greater number of dental devices on an outpatient basis, care must be increase. Extraoral radiographs are

prioritized, such as panoramic radiography and computerized cone beam tomography, since intraoral radiographs are associated with greater salivation and the possibility of coughing. It is opted for the use of disposable instruments, rubber dam and high-volume suckers, minimizing the production of aerosol or splashes, in addition to the use of absorbable sutures. The use of ultrasonic instruments, hand pieces and high and low speed should be minimized (Alharbi et al., 2020; Meng et al., 2020; Peng et al., 2020). Table 1 describes the chief protocols to treat and prevent the most common oral diseases in CA patients.

Table 1 – Oral diseases, CA patients and suggested management during COVID-19 pandemic.

Oral disease	Prevention care	Traditional Dental Protocol in cancer patients	Dental Protocol during COVID-19 pandemic
Periodontal disease	Good oral hygiene, teeth cleaning, and mouthwashes, in order to decrease the bacteria associated to plaque buildup (Mann, Bernstein, & Findler, 2020).	Conventional periodontal treatment. Teeth with advanced periodontal disease and teeth with probing depth ≥ 6 mm and furcation lesion I, II, III should be extracted (Hong et al., 2018).	Avoidance of the use of ultrasonic instruments. It is recommended to reinforce oral hygiene (Alharbi et al., 2020; Meng et al., 2020; Peng et al., 2020). Urgent procedures must be performed (Alharbi et al., 2020; Coulthard, 2020; Dave et al., 2020; Meng et al., 2020; Spagnuolo et al., 2020; Yang, Soh et al., 2020).
Xerostomia	Masticatory, gustatory, electronic stimulants, saliva substitutes, cytoprotective agents or systemic agents (Mercadante, Al Hamad, Lodi, Porter, & Fedele, 2017).	Use of pilocarpine, cevimeline, as low intensity laser and acupuncture (Mercadante et al., 2017).	Use of pilocarpine or cevimeline (Mercadante et al., 2017), since they are administered at home and do not require professional ability. Monitoring via tele-dentistry (Dave et al., 2020; Edwards et al., 2020; Guo et al., 2020; Machado et al., 2020).
Dental caries	Preventive home care instructions that include oral hygiene, daily self-application of 1.0% sodium fluoride, avoidance of ingesting cariogenic foods, usage of mouthwash solutions or artificial saliva preparations (Gupta et al., 2015).	Removal of cavities tooth restoration (Hong et al., 2018).	Hand pieces and high and low speed should be minimized. Necessity of opting for hand instruments. It is recommended to reinforce oral hygiene (Alharbi et al., 2020; Meng et al., 2020; Peng et al., 2020). Treatment of extensive or symptomatic cavities (Hong et al., 2018), considered urgent

			(Alharbi et al., 2020; Coulthard, 2020; Dave et al., 2020; Edwards et al., 2020; Meng et al., 2020; Spagnuolo et al., 2020; Yang, Soh et al., 2020).
Osteoradionecrosis	Dental evaluation of the infection source and the necessity of tooth extractions must be assessed: periodontal probing depth ≥ 5 mm and furcation involvement. Extractions, if necessary, must be performed at least 2 weeks before the start of radiotherapy (Kawashita, Soutome, Umeda, & Saito, 2020).	The treatment is associated to the staging of the osteoradionecrosis and patient-related factors. Traditional management: hyperbaric oxygen, surgical debridement and medical management (pentoxifylline and tocopherol). Cases refractory to conservative treatment or advanced stages: surgical resection with or without vascularized tissue reconstruction (Kolokythas, Rasmussen, Reardon, & Feng, 2019).	Preference for conservative treatment, since they are administered at home and do not require contact with a professional (Dave et al., 2020; Edwards et al., 2020; Guo et al., 2020; Machado et al., 2020).
Herpes simplex virus	Maintain body immunity: ensure sleeping quality, reasonable diet, balanced nutrition and physical exercise (Guo et al., 2020). Acyclovir 200 mg 4x/day is effective in preventing (Elad et al., 2017).	Acyclovir 400 mg 5x/day (Elad et al., 2017).	Acyclovir 400 mg 5x/day (Elad et al., 2017). Monitoring via tele-dentistry (Dave et al., 2020; Edwards et al., 2020; Guo et al., 2020; Machado et al., 2020).
Oral Mucositis	Use of benzydamine oral rinse after radiation therapy, dentist oriented oral hygiene, use of palifermin before and after chemotherapy, chlorhexidine mouth rinse in chemotherapy induced injury, low intensity laser therapy, cryotherapy (Chaveli-López & Bagán-Sebastián, 2016; Daugėlaitė, Užkuraitytė, Jagelavičienė, &	Benzydamine oral rinse and analgesic medications to treat pain (Ritwik, 2018), low intensity laser therapy, chemotherapy-induced mouth rinse with chlorhexidine, cryotherapy, use of royal jelly in oral mucositis in patients undergoing radiotherapy and chemotherapy (Chaveli-	Due to environmental and social changes during the epidemic, body's immune function disorders may occur and affect the oral mucosa, generating injuries (Guo et al., 2020). Therefore, the main thing is the prevention of these injuries with the mentioned methods, but with extreme biosafety.

	Filipauskas, 2019; Ritwik, 2018).	López & Bagán-Sebastián, 2016; Daugėlaitė et al., 2019).	
Trismus	Starting jaw stretching exercises before the onset of symptoms and post radiotherapy that prevents tonic muscle contraction and improves mandibular opening (Villa & Akintoye, 2018).	Flap surgery and medications, such as botulinum toxin injections and pentoxifylline (Villa & Akintoye, 2018; Wirk & Wingard, 2009) and when possible to reduce the dose of radiation from the TMJ and chewing muscles (Rapidis et al., 2015).	Preference to less invasive treatments, reducing of the radiation dose and avoidance of surgical procedure.
Fungal Infections	Topical antifungal therapy in cases of fungal infection and administration of systemic antifungal therapy in cases of disseminated infection (Villa & Akintoye, 2018).	Dental follow-up with oral hygiene protocol appropriate to the patient; immediate assistance in case of any dental or periodontal disorder; administration of Fluconazole as preventive medicine in cases of patients with severely compromised immune systems (Villa & Akintoye, 2018; Wirk & Wingard, 2009).	The same prescriptions and choose preventive antifungal whenever possible (Wirk & Wingard, 2009). Monitoring via telemedicine.
Opportunistic Bacterial Infection	Constant monitoring with the dentist in order to avoid the appearance and / or removal of infectious foci; maintenance of good oral hygiene habits and make use of mouthwashes containing 0.12% chlorhexidine (Hong et al., 2010; Mosel, Bauer, Lynch, & Hwang, 2011).	Treatment is based on the removal of infectious foci through the prescription of oral antibiotics and subsequent dental treatment, as needed (Hong et al., 2010; Mosel et al., 2011). Culturing the lesions can help determine the ideal antibiotic (Levi & Lalla, 2018). The dentistry must provide guidance on oral hygiene habits and prescribe mouthwashes containing	Patient monitoring should be made via tele-dentistry (Dave et al., 2020; Edwards et al., 2020; Guo et al., 2020; Machado et al., 2020), in order to track possible foci of opportunistic bacterial infections and the prescription of oral systemic antibiotics for home treatment.

		0.12% chlorhexidine (Hong et al., 2010; Mosel et al., 2011).	
Dysphagia	The patient must maintain good oral hygiene habits; follow up with a dentist for control and adequacy of the oral environment and the increase of the intake of liquid and / or pasty nutritious diets such as soup and vitamins (Devi & Singh, 2014).	It involves a multidisciplinary team. From the dental point of view, the treatment consists of prescribing mouthwashes containing hydrogen peroxide diluted in water, anesthetics to reduce painful symptoms, use of sialogogue drugs to stimulate saliva production and guidelines for oral hygiene practices (Devi & Singh, 2014).	The treatment may remain the same, as the drugs are administered at home. Monitoring of the patient must take place via tele-dentistry (Dave et al., 2020; Edwards et al., 2020; Guo et al., 2020; Machado et al., 2020).

Source: Authors.

In general, there is no evidence to explain a conclusive association between CA and COVID-19, due to the topicality of the subject and the low number of clinical studies with significant sample number. The ethical challenges facing oncologists and clinical investigators during the global COVID-19 pandemic (Shuman & Pentz, 2020) and the absence of studies also impacts the guidelines for dental-oncological care (Xia et al., 2020). Thus, the current evidence shows that more attention is needed for prevention and motivation of self-care, resulting in fewer emergency complications in moments of great risk. This also makes us reflect on the importance of the presence of the dentist as part of a multidisciplinary team in the treatment of CA patients (Berlin-Broner & Levin, 2020).

4. Conclusion

In conclusion, CA patients seem to have high risk of susceptibility and to develop the most severe form of COVID-19 due to their immunosuppressed state. The decrease in immunity in these patients can be considered a factor in triggering the aggravation of oral lesions due to the change in routine and antineoplastic treatment due to social isolation. The studies revealed that principal oral conditions in cancer patients during pandemic were mucosistis, xerostomia and periodontal disease. Furthermore, the data showed that it is crucial

to check requirements of oral attendance and determine protocols of dental care in cancer patients during COVID-19 pandemic. The protocol should include conservative and preventive treatment, prioritizing urgent procedures.

Therefore, multi-professional care is capable of providing better quality of life in times of pandemic. As future perspectives, gathering scientific evidence can help develop prevention, diagnosis and treatment strategies in CA patients during COVID-19.

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Declaration of Interests

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