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Addressing the Oral Side Effects of Cancer

PROVIDING APPROPRIATE DENTAL CARE BEFORE, DURING, AND AFTER CANCER TREATMENT IS IMPORTANT TO MAINTAINING ORAL HEALTH AND IMPROVING QUALITY OF LIFE.

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The course of cancer treatment is based on the type of malignancy, site of the cancer, and patient factors such as age and comorbidities. Patients' oral health status is also important. Recent advances in cancer therapy have led to higher survival rates, emphasizing the need to maintain optimal oral health.¹ Dental hygienists play an important role in providing treatment to patients with cancer as part of the comprehensive oral care and oncology team.

Oral assessment, implementation of basic oral care protocols, and recognition of emerging oral complications should be provided before, during, and after cancer therapy.² Basic oral care for patients with cancer includes preventing infection, treating active infection, controlling pain, maintaining oral function, managing oral complications, and improving quality of life.^{1,3,4} Ideally, all patients with cancer should have a pretreatment oral assessment, especially those diagnosed with head and neck cancer or hematologic cancer, those undergoing hematopoietic stem cell transplantation (HSCT), and patients with poor oral health. The pretreatment assessment should be completed as soon as possible following diagnosis and within 2 weeks to 3 weeks prior to starting cancer therapy. The evaluation should include examination of the head and neck, oral soft tissue, and oral cavity, in addition to periodontal evaluation and the capture of a full series of dental radiographs. Nonemergency dental treatment can be delayed until the patient's overall health status is stable.^{5,6} Each patient should receive an individualized care plan based on the specific type of cancer he or she has. The dental team needs to understand the prescribed cancer treatment in order to create this treatment protocol.⁷ Communication with

the oncology team is essential to providing successful oral care in this population. In unique or complex cases, consultation with dental specialists who specialize in oncology may be needed.

Prior to the start of cancer treatment, patients should receive prophylaxis, as this may reduce the severity of oral complications, particularly oral mucositis.⁸ Incipient to small caries lesions may be treated with fluoride, a temporary

restoration, and/or sealant application until definitive care can be provided. Caries involving the pulp, however, requires active intervention. Patients who need teeth extracted, due to periodontitis or other causes, must have the surgery completed before treatment begins because the risk of osteonecrosis is elevated when surgery is performed after cancer therapy is complete.

Patient education is an integral part of the pretreatment evaluation. Patients must understand how to perform optimal self-care to safeguard their oral health. Dental hygienists can also counsel patients on consuming a healthy diet and avoiding tobacco and alcohol use. They should be assessed for xerostomia, taste change or loss, and mucosal sensitivity.

PROTOCOLS DURING TREATMENT

Oral complications during active cancer treatment negatively impact patients' quality of life. These problems can become so severe that the cancer therapy has to be altered, which may affect treatment outcomes. Patients should be monitored closely during cancer treatment to manage any oral changes and to reinforce preventive strategies. During therapy and follow-up care, management of complications

associated with mucositis, oral infection, altered salivation, and sensory changes (pain, taste) is critical.

The frequent use of mouthrinses, atraumatic toothbrushing and flossing twice a day, and daily administration of fluoride gels are recommended.^{1,9} Prescription-strength fluoride toothpaste may be warranted. Patients with mucositis may not be able to tolerate it due to oral discomfort, so switching to mild-flavored nonfluoride dentifrice with the addition of a fluoride mouthrinse may be helpful. If a patient cannot tolerate a regular soft toothbrush because of mucositis, foam brushes or super soft brushes can be used.¹⁰ If patients are skilled at flossing without traumatizing the tissues, they should continue flossing throughout treatment. Toothpicks and water irrigation devices should not be used in patients who are neutropenic and/or thrombocytopenic to avoid tissue trauma.¹¹ Clinicians should encourage patients to eat a noncariogenic diet and advise them about the caries risk associated with consuming dietary supplements rich in carbohydrates and medications sweetened with sucrose, such as nystatin suspension.¹²

The frequency of care depends on the oral health status of the patient. The dental care plan should be based on the presence of oral disease, effectiveness of the patient's oral hygiene, risk of progression of oral disease, and oral complications caused by the cancer therapy.

EARLY AND LONG-TERM ORAL COMPLICATIONS

Patients undergoing cancer therapy are at increased risk of mucositis, oral mucosal infections, xerostomia, osteonecrosis, and cancer recurrence. Mucositis care focuses on alleviating symptoms and managing the secondary factors that affect the severity of mucositis.¹¹ It includes good oral hygiene, topical anesthetic/analgesic agents, nonmedicated oral rinses, mucosal coating agents, film-forming agents, nutritional supplements, and systemic analgesics, as needed. Patients with mucositis may experience relief from symptoms by rinsing with a mixture of 1 teaspoon of baking soda and 1 teaspoon of salt dissolved in water.

Fungal, viral, and bacterial infections are common among individuals undergoing cancer therapy. Oral and oropharyngeal candidiasis presents as cracking at the corners of the mouth and erythematous or white patches.¹³ Candidiasis may also cause a coated sensation in the mouth, oral burning, and taste change. While topical antifungal agents are commonly prescribed to prevent candidiasis, their efficacy is inconsistent and systemic agents may be more effective for treatment of infection.^{14,15} The risk of fungal infection is

greater among those undergoing head and neck radiation and patients receiving chemotherapy. A variety of fungal species may present in patients that may be resistant to standard antifungal therapy.¹³

Herpes simplex virus (HSV) infections may arise during cancer care. HSV is most commonly followed by varicella zoster, Epstein-Barr virus, and cytomegalovirus, particularly in patients with hematologic malignancies and those undergoing chemotherapy and HSCT. Acyclovir and valacyclovir are equally effective in preventing and treating HSV, but resistant virus and breakthrough infection can occur.^{16,17}

The normal oral flora may result in local oral or systemic infection in patients with hematologic cancer and those receiving HSCT. In immunosuppressed and neutropenic patients, infection may be caused by nosocomial organisms and gut flora (not common in the oral cavity). Culture and identification of organisms and antibacterial sensitivity may be required for selection of an appropriate antibiotic in hospitalized patients, and meticulous oral hygiene is paramount.¹² Other complications among patients undergoing HSCT include graft-vs-host disease (GVHD), osteonecrosis of the jaw, and secondary malignancies. GVHD is a multiorgan disease that occurs following allogeneic HSCT. Oral care of patients undergoing this treatment requires an experienced and interdisciplinary management team, including oral health professionals. Common oral signs and symptoms of GVHD include lichenoid striations, erythema, ulceration, xerostomia, mucocele, dysgeusia, trismus, and fibrosis.⁴ Management of GVHD focuses on optimizing oral health to prevent progressive dental disease; controlling symptoms such as pain, sensitivity, and oral dryness; and specialized treatment of the oral manifestations.

Patients who have undergone cancer treatment may experience long-term side effects, including xerostomia, reduced saliva production (hyposalivation), and dysgeusia.¹⁸ Those with xerostomia and/or hyposalivation should be encouraged to sip water throughout the day and to avoid drying agents such as caffeine, alcohol, and sugar-containing products. Artificial saliva products, moisturizing mouthrinses, and water-based lubricants may prevent the oral cavity from drying out. Patients may also gain relief from xerostomia symptoms by using toothpastes, mouthrinses, and gels with a neutral pH. To prevent caries, an at-home fluoride regimen using trays should be considered. Prescription secretagogues may stimulate salivary gland tissue, boosting salivary flow. Chewing xylitol gum may also provide symptom relief and offer caries-prevention benefits.¹⁹

Individuals with blood-related cancers may have increased oral bleeding due to thrombocytopenia, disturbance of coagulation factors, or damaged vascular integrity. They may also experience dentinal hypersensitivity due to decreased salivary flow, low salivary pH, and neuropathic pain.^{1,20} The key is identifying risk factors and symptoms early and providing a referral for expert care, if necessary.

Managing oral complications remains important even once cancer treatment is completed. Periodontal maintenance and effective oral self-care are key. Patients who can tolerate power toothbrushes should use them. Keeping the mouth and lips lubricated is helpful. Patients should be encouraged to eat a noncariogenic diet and avoid tobacco and alcohol use.

Patients previously treated for oral and head and neck cancer and upper aerodigestive cancers are at high risk of new cancer development or recurrence of disease. Individuals who were young when they underwent HSCT, those who received total body irradiation or chemotherapy, and patients



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who had GVHD are at high risk of secondary malignancies. As such, oral health professionals need to be especially diligent when screening these patients for oral cancer.

CONCLUSION

Due to increasing numbers of cancer diagnoses and a growing population of survivors, oral care is critical to improving the quality of life among this patient population. Dental professionals are responsible for oral cancer screening and maintenance and providing appropriate referrals. Pre-treatment and post-treatment protocols for oral care before, during, and after cancer treatment should be routine practice. Oral health professionals are part of the cancer team and can make positive contributions throughout the entire cancer continuum. 

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