

Oral Care for Mouth Sores

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Abstract

Cancer treatments and radiation therapy can result in medically-induced oral mucositis (OM) which presents challenges for medical professionals of otolaryngology. Nearly 40% of patients undergoing cancer treatment experience OM, manifesting as mouth sores that may increase in severity and discomfort to compromise the quality or even jeopardize a patient's life. Oral mucositis often leads to hospitalizations to address secondary infections or administer analgesic medications. While medications are available to treat the symptoms and complications of oral mucositis, many of these have side effects and none are able to prevent the condition from developing. As a result, the management of oral mucositis centers around a comprehensive oral hygiene regimen that includes the use of oral rinses. Several of the mouth rinses popular among cancer patients have their own side effects or limitations. One mouth rinse growing in use and popularity among cancer patients contains stabilized chlorine dioxide (SCD) and has shown no adverse side effects. This article presents the results of patient interviews conducted to determine the effectiveness of SCD products in alleviating medically-induced oral mucositis. Included are 5 case histories that reflect positive, yet diverse, experiences of cancer patients using SCD oral health products during, and after, their cancer treatments. Doctors and support staff working in the field of otolaryngology can become acquainted with the challenges of oral mucositis and offer care, education and emotional support to ease the unique burden of this segment of their patient population.

Introduction

Have you ever considered how resilient your mouth is? Composed of a thin layer of cells with a rapid rate of turnover, the lining of your mouth is poised to heal quickly from a wide array of digestive insults: from a palate charred by hot food to an esophagus scorched by regurgitated stomach acid.

The oral cavity is lined with a layer of non-keratinized, squamous epithelial cells that are replaced almost as quickly as they are injured, whether by trauma, burn, lesions or infection. This prompt division and replacement of cells renders the oral lining, or mucosa, vulnerable to chemotherapy and radiation, which by necessity target rapidly dividing cells [1]. As such, oral mucositis, or mouth sores, are a common side effect of cancer treatment.

Affecting all areas of the oral cavity, mouth sores can range from mild, moderate to severe and appear as red, shiny patches or as craters filled with pus. Oral mucositis can also cause increased mucous, thicker saliva and /or swollen gums that bleed easily [1,2].

A patient's life can be jeopardized by severe oral mucositis. Formidable pain upon chewing and swallowing can lead to inadequate nutritional intake, resulting in cachexia. Multiple, painful sores can interrupt the planned treatment schedule resulting in missed or reduced doses that can compromise treatment goals [2,3]. Should mouth sores become ulcerated or infected, the patient may require hospitalization for intravenous administration of analgesic medication.

Complications of oral mucositis can also affect the quality of a patient's life. For example, it can cause xerostomia, or dry mouth, making it difficult to speak and swallow comfortably, as well as

halitosis, challenging one's ability to feel confident in intimate and social settings [3]. The added burden of oral mucositis taxes an already-compromised immune system and diminishes the patient's mental outlook.

Nearly 40% of chemotherapy patients develop oral mucositis to some degree. It usually begins 5-10 days following the start of treatment and generally lasts from one to six weeks after it ends, although it can persist for as long as 3 1/2 months. The widely-held belief that mucositis is generally short-lived may lead to complacency and acceptance of pain and discomfort when vigilance with oral care is required to manage the condition [4].

Oral mucositis often leads to secondary infections that require medical intervention [2]. The antiviral medication, acyclovir, can prevent flare-ups of herpes simplex, while fluconazole, nystatin rinses and clotrimazole troches can target fungal infections such as candidiasis. However, certain oral candida species and candida infections involving multiple species, or candida infections among immune-compromised patients, may resist treatment by specific azole and statin drugs [5]. Eradicating secondary infections makes it more likely patients will continue with the prescribed treatment plan without delays or interruptions [6].

Palifermin is a medication used to facilitate the healing of severe, protracted oral mucositis. Used most often with patients undergoing stem cell therapy for head and neck cancers, palifermin has proven effective at reducing the length and severity of mucosal inflammation. It, however, can cause unwanted side effects like discolored mucous membranes and abnormal taste sensation. Achy joints and skin rashes have also been reported [6].

The use of oral glutamine provides a novel approach to protecting the mucosa from radiation-induced damage. Showing promise in

reducing the severity and duration of oral mucositis, it has already proven effective against chemotherapy and radiation-induced intestinal injury with little to no side effects [7].

Glutamine is the most abundant free amino acid in the body. A by-product of its metabolism is glutathione, a potent free-radical scavenger that can combat the oxidative effects of chemotherapy and radiation. Cancer patients, especially those in a cachexic state, show depletion of skeletal muscle with a diminished supply of glutamine and subsequent glutathione over time. The combined anti-oxidant and anti-inflammatory properties of glutathione may help minimize insult to the delicate oral mucosa, although further research will reveal its safety and efficacy [7].

No medications or interventions have yet proven effective at preventing oral mucositis and the ones that decrease its incidence and severity often cause unwanted side effects [1,3]. Consequently, it is important to institute a comprehensive regimen that centers on oral hygiene and care [1]. Patients find that brushing frequently with a soft-bristle toothbrush and a non-abrasive toothpaste, along with flossing gently after meals and rinsing in-between, helps prevent secondary infections and undue pain [1].

Oral rinses play a vital role in managing oral mucositis by maintaining oral health and hygiene. CHX, or Chlorhexidine, is a commonly used antibacterial rinse that prevents exacerbations of oral mucositis by targeting gingivitis and plaque. Unfortunately, long term use can lead to discoloration of the teeth and gums [8]. Further, CHX has been shown to destroy osteoblasts and fibroblasts, two cell types vital to the healing process [9]. CPC, or Cetylpyridinium chloride, is an antiseptic rinse that is less likely to result in side effects, although aphthous ulcers and inflamed gums have been noted [10].

One of the most widely-known mouth rinses is Biotene. Free of alcohol and irritants, it duplicates the enzymes naturally found in saliva. While no known side effects have been reported, it is somewhat limited to relieving xerostomia [6]. Another popular rinse is Magic Mouthwash. Its combination of antibiotic, anti-fungal and anti-inflammatory ingredients are generally well tolerated, but burning or tingling of the mouth with accompanying nausea, diarrhea and drowsiness have been reported [11].

A mouth rinse that is gaining popularity is ClōSYS unflavored mouth rinse. Designed to destroy harmful bacteria by way of stabilized chlorine dioxide (SCD), its ability to target dry mouth and bad breath without adverse side effects has many dentists and hygienists recommending it for general oral health. Its use in the cancer community is growing rapidly due to its potential for relieving a wide array of symptoms commonly experienced by those undergoing cancer treatment.

In response to positive feedback from registered dental hygienists using an SCD oral health system with Down syndrome patients [12], Rowpar Pharmaceuticals, LLC, conducted a patient survey and follow-up interviews to determine if oral health products containing stabilized chlorine dioxide could alleviate oral mucositis in cancer patients. These diverse case histories reflect positive patient experiences.

Case 1

Oral lesions

A 58 year old female originally diagnosed with breast cancer in 2003 with a recurrence in 2013. Treatment for this patient's cancer recurrence was a combination of chemotherapy and radiation. Five days after beginning treatment, she developed aphthous ulcers, much worse than the canker sores she had encountered in the past.

The sores were red with pus-filled centers located diffusely throughout her oral cavity that caused severe pain that interfered with eating and drinking. She could not tolerate her favorite spicy foods and the crunchy ones cut into the sores. The patient could tolerate little more than bland soup and mashed potatoes and conveyed that she endured the pain of eating only to keep herself going.

After doing some online research and reading a pamphlet given to her by her oncology nurse, the patient ordered toothpaste and unflavored mouth rinse containing SCD. She began brushing her teeth 3-4x/day and rinsing several times between brushings.

After one week of using the products, the patient could swallow more easily, and by the second week the mouth sores started to heal. Fewer ulcerative lesions were noticeable as the weeks progressed, and the patient reported being able to chew and swallow without pain, significantly improving her attitude and outlook.

The patient is still subject to occasional mouth sores, but she continues to use the products daily for the oral health benefits they provide.

Case 2

Oral lesions

A 67 year old female diagnosed with Triple Positive Estrogen Dependent Breast Cancer in 2010. This patient received 6 months of IV chemotherapy administered every 28 days, a bilateral mastectomy and radiation therapy followed by ongoing drug therapy with aromatase inhibitors (Note: The patient was part of a triage team for 9/11 and was exposed to toxic chemicals at Ground Zero; she and her doctors feel this may have played a part in the development of her cancer).

During her chemotherapy treatments, the patient developed small, red sores along the mucosal lining of her bottom lip. The lesions constantly rubbed against her bottom teeth, making it difficult to brush them without significant discomfort.

The patient initially tried Listerine but found it too strong and irritating. She also experimented with Biotene but did not care for the feel of it in her mouth. While searching online for other oral remedies for mucositis, she came across the unflavored mouth rinse containing SCD. She was pleased it did not contain alcohol and instantly liked the feel of it as she swished and rinsed.

The patient also began brushing with a similar SCD toothpaste and applying it topically to the sores 2-3 times per day. Within a week, the persistent inflammation inside her lower lip subsided and the patient could brush her teeth without incident.

Cancer-free for five years to date, the patient no longer suffers from mouth sores. She continues to use an SCD breath spray at night to

moisturize her mouth; a preventive measure she finds effective and refreshing.

Case 3

Halitosis

A 46 year old female diagnosed with Hodgkin's Lymphoma (Nodular Sclerosis 2A) in 2011.

This patient's treatment regimen consisted of 6 rounds (12 treatments) of ABVD chemotherapy (a combination of adriamycin, bleomycin, vinblastine and dacarbazine).

The patient developed mouth sores within four days of her first treatment. The lesions were red with white, ulcerated centers. At any given time, there were 8-10 lesions located within the buccal mucosa of her right cheek, the side that was face down while sleeping.

The patient's favorite foods, like salsa and fresh pineapple, caused an intolerable burning sensation that precluded them from her diet. The patient noted with frustration that as soon as the sores began to heal, they would "return with a vengeance" after each treatment.

The patient tried Biotene after reading a favorable review on a cancer blog, but did not care for its nauseating feel or taste. She discovered unflavored mouth rinse containing SCD online while searching for help with her mucositis, xerostomia and halitosis.

The patient immediately liked the way it kept her mouth feeling moist without sensations or tastes to upset her stomach. Within three days, she and her husband observed a noticeable improvement in her breath. Throughout her treatment, the patient brushed her teeth and rinsed her mouth twice a day with the SCD products. She still developed mouth sores following treatments, but they were less severe and healed more quickly. The patient recalled with gratitude that the SCD toothpaste and unflavored oral rinse made the treatments more tolerable. Impressed with her results, her husband began using the toothpaste and they both continue to do so daily, six years later.

Case 4

Gingivitis/chemo-taste

A 58 year old female diagnosed with ovarian cancer in 2014. The original goal for this patient's treatment was 6 weekly infusions of taxal and carboplatin, but her oral mucositis was so severe that treatments were reduced from weekly to monthly. Several mouth sores appeared inside her oral cavity and at the corners of her mouth within the first week of treatment.

The oral mucositis intensified after each treatment effecting the buccal mucosa, gingival tissues and teeth, while widespread gingivitis resulted in a fractured tooth being removed. The dental hygienist recommended unflavored mouth rinse containing SCD after witnessing the positive results of other cancer patients with oral mucositis.

The patient noted that her gums stopped bleeding within the first month of using the toothpaste and unflavored rinse. The dentist and hygienist both observed a significant reduction in the patient's gingivitis within 3 months' time.

This patient was also plagued with a medicinal smell and taste that lingered on her breath from the chemotherapy. She had tried chewing gum and sucking on mints and candies, but none of these ameliorated the "chemo taste." Having had good results with the mouthrinse, she began brushing her teeth with an SCD toothpaste every 2-3 hours. Employing this regimen temporarily alleviated the intense medicinal taste and smell, allowing her to eat and drink enough to receive adequate nutrition and hydration. The patient shared, "You feel so alone and lousy when you're going through treatment that you are very grateful to have one thing that makes you feel better."

Case 5

Xerostomia

A 69 year old male diagnosed with colon cancer in 2013. This patient discovered the benefits of SCD oral care products in a roundabout fashion. When the patient first sought medical treatment in 2012, it was for ongoing hip and knee pain. He was prescribed NSAIDS to be taken daily. While they provided relief, the patient developed side effects that included light-headedness, weakness in his left leg, numbness in his left fingers and toes and severely elevated blood pressure. After ruling out a stroke, he had a complete physical, including chest x-rays that showed a lesion consistent with metastatic cancer.

While undergoing a variety of tests to locate the primary lesion, a colonoscopy revealed a cancerous polyp. Amazingly, the lesion on the chest film was an artifact; one that led to the discovery and removal of a hidden cancer. Although the patient was cancer-free after his surgery, his blood pressure required medical treatment. The prescribed medications caused a severe case of xerostomia, or dry mouth, that created gingivitis in a previously healthy oral cavity. Normal brushing caused painful raw areas and bleeding. The patient's mouth was perpetually sensitive and inflamed and fillings suddenly needed to be repaired.

The patient's mouth was so dry that he had to sip water and chew ice all day long. Flavorful foods containing spices aggravated the inflammation. In a restaurant, his water glass had to be refilled 3-4 times. His dentist originally prescribed Peridex™, a branded form of CHX, that helped with the inflammation but caused teeth yellowing and an increase in tartar. His dentist then recommended an unflavored mouth rinse containing SCD, which the patient had already discovered while conducting his own research.

The patient used the unflavored mouth rinse 3 times/day and brushed with an SCD-containing toothpaste morning and night. This regimen maintained the improvement gained from the short-term use of Peridex™, minus the side effects. The xerostomia was significantly reduced and the patient continues to use the SCD oral care products today. "They helped me, they had no side effects and they gave me some confidence during a rough period in my life."

Discussion and Conclusion

Oral mucositis is a common and often devastating side effect of chemotherapy and radiation. It compromises the patient's ability to stay hydrated and nourished at a time when nutritional status is critical. Oral mucositis can become so severe as to require hospitalization and it can cause treatments to be spaced and dosages reduced, sabotaging the patient's chance for survival. Although various

medications and modalities target the pain and complications of oral mucositis, proper oral care remains an effective and minimally-invasive way to manage the condition.

As these case histories indicate, oral care products containing stabilized chlorine dioxide can effectively address the mouth lesions, gingivitis and “chemo taste” that plagues cancer patients and decimates their appetites. They also relieve xerostomia, making it easier to chew and swallow food, thus enabling the digestive process to begin in the mouth, where nature intended. Lastly, the SCD oral products alleviate halitosis, giving patients back their confidence. Overall, the products target oral mucositis and its wide array of complications without any reported side effects.

Doctors of otolaryngology, and their support staff, provide patients with exceptional care, education and emotional support that can extend to those patients suffering from the ravages of medically-induced oral mucositis. As Case #3 cancer survivor stated after discovering the products that worked best for him, “Mouth sores are one of the worst side effects of going through cancer, running neck-a-neck with fear and anxiety. When you find something that eases your way, it gives you a spark of hope that the process is manageable and you can overcome.”

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