

Managing common complications of cancer treatment with nutrition

At a recent press conference organized by Cancerinformation.com.hk and Hong Kong Health Care Alliance, a leading clinical oncologist and two advanced practice nutrition experts tackled the issue of cancer-related malnutrition and discussed the impact and management of oral mucositis, a common and debilitating complication of anticancer treatments.

Clinical impact and management of oral mucositis



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Oral mucositis is a common complication of chemotherapy (CT) and radiotherapy (RT)

The oral cavity is highly susceptible to the direct and indirect toxic effects of cancer treatments, such as CT and RT, particularly in patients with head and neck cancer (HNC).¹ In particular, the oral cavity is especially susceptible to cancer treatment-related toxicity because of the rapid rate of cell turnover in the mucosal lining.¹

Oral mucositis is the most debilitating treatment-related toxicity of HNC.² According to the European Oncology Nursing Society, the risk of developing oral mucositis following many standard CT regimens for patients with HNC is approximately 40%, while all patients administered high-dose RT for HNC are expected to experience mucositis.³ Furthermore, patients receiving head and neck RT alone, or as chemoradiotherapy (CRT), are more likely to develop severe oral mucositis than those receiving CT alone.⁴

It is expected that approximately 40% of patients treated with standard CT, and 100% of patients treated with high-dose RT to the head and neck, will develop oral mucositis

Severe oral mucositis symptoms worsen quality of life (QoL) and adversely affect treatment outcomes

Many patients with severe oral mucositis suffer from a multitude of coexisting moderate or severe oral symptoms

Table. Incidence of debilitating oral symptoms in patients with severe oral mucositis^{4*}

Oral mucositis-related symptoms	Incidence rate ¹ (%)
Mouth pain	77
Throat pain	79
Difficulty chewing	78
Difficulty swallowing	77
Difficulty speaking	66

Data are based on a local multicentre study involving 137 patients treated with stomatotoxic CT, high-dose myeloablative CT with or without concomitant total body RT and head and neck RT or CRT.
*World Health Organization grades 3 and 4
¹Includes both moderate and severe intensities (n=68)
CRT, chemoradiotherapy; CT, chemotherapy; RT, radiotherapy

(Table) that cause profound pain, oral functional incapability, sleep disturbances, depression and reduced QoL.^{3,4} Patients who have been treated for HNC may experience weight loss and nutritional deficiencies as difficulty chewing and swallowing, as well as taste disturbances and pain, may limit their nutritional intake.⁴ Patients with HNC and treatment-related oral mucositis are significantly more likely to have weight loss of more than 5% compared with patients without oral mucositis (60% vs 17%; $p < 0.001$); mean weight loss was 3kg for patients with any grade of oral mucositis and 4kg for patients with grade 3 or 4 oral mucositis.^{4,5} Moreover, oral mucositis is associated with an incremental cost of US\$1,700–US\$6,000 per patient, depending on the grade.⁵

Treatment-related severe oral mucositis can also lead to dose reduction or a temporary interruption or delay of treatment. The average duration of hospitalization is significantly longer during CT cycles for patients who have developed CT-related oral or gastrointestinal mucositis, and CT dose reduction is twice as common in patients who develop oral mucositis than those who do not.⁶ Thus, oral mucositis can be a dose-limiting side effect of CT with direct effects on treatment outcomes.⁶

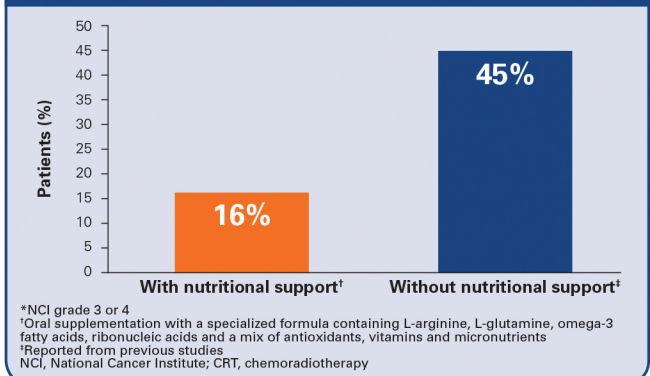
The role of immunonutrition supplements in managing oral mucositis

Severe oral mucositis-related pain can significantly compromise nutritional intake. Furthermore, treatment-related changes in taste can further decrease patient appetite, potentially leading to malnutrition.

Immunonutrition supplements may prevent severe oral mucositis, reduce the risk of postoperative infection and shorten the length of hospital stay for patients with cancer.⁶ Oral supplementation with a specialized formula containing L-arginine, omega-3 fatty acids, ribonucleic acids and a mix of antioxidants, vitamins and micronutrients (immunonutrition) has been shown to reduce inflammatory markers in patients with stage III or IV HNC treated with concomitant CRT.⁷ Furthermore, the incidence of severe acute mucositis in patients who received immunonutrition was 16%, whereas earlier studies of patients treated with RT alone or CRT reported a prevalence of severe acute mucositis of 45% (Figure).⁷

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Figure. Incidence of severe* acute mucositis in patients treated with CRT receiving immunonutrition supplements⁷



Other clinical strategies for managing the symptoms of oral mucositis

Effective management of the symptoms of oral mucositis may improve nutritional intake and QoL. The use of saline mouth rinses, ice chips and topical mouth rinses containing a local anaesthetic can control oral mucositis-associated pain. Sipping water, using artificial saliva or non-medicated mouth rinses, and chewing sugarless gum can alleviate mouth dryness, thereby reducing the risk of oral inflammation and infection. Additionally, a standardized oral care protocol, including brushing with a soft toothbrush, flossing and gargling with saline or sodium bicarbonate rinse, is essential to minimize microbial colonization of lesions and may help to reduce the risk of exacerbating oral mucositis.⁶

Summary

Oral mucositis is a clinically important and potentially dose-limiting complication of anticancer therapy. Severe mucositis lesions can cause significant pain, interfere with nutritional intake and may necessitate interruption or delay of a patient's treatment. Immunonutrition supplements containing arginine, omega-3 fatty acids and ribonucleic acids may prevent severe oral mucositis and improve patient outcomes. Applying effective management strategies for patients who do develop oral mucositis may also enhance nutritional intake, reduce the risk of exacerbating any symptoms and improve patient QoL.

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The critical role of nutrition in improving cancer outcomes



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Cancer is on the rise in Hong Kong

The incidence of cancer in Hong Kong increased at an average rate of 3.1% per year between 2003 and 2013¹ compared with annual population growth of 0.7%.² In 2013, an even higher annual increase of 3.9% was recorded with a total of 28,936 new cancer cases being diagnosed.¹

Malnutrition in cancer patients has deleterious effects on clinical outcomes

There are two main factors that can lead to malnutrition in patients with cancer:

- Tumour-induced metabolic alterations causing increased energy demand
- Inadequate food intake from loss of appetite and/or treatment-related side effects, such as oral mucositis, dysphagia, taste changes, gastrointestinal distress, etc.

Compromised nutritional status is associated with increased morbidity and mortality in patients with cancer, as well as reduced quality of life (QoL).³ In particular, treatment-related adverse events are often more severe in patients with cancer who are malnourished and the risk of infection is also increased.³

Up to 80% of patients with cancer experience significant chemotherapy (CT)- and/or radiotherapy (RT)-related weight loss.³ Cancer cachexia (or 'wasting syndrome'), defined as an unintentional and progressive weight loss from malnutrition resulting in a loss of lean muscle mass and subcutaneous adipose stores, can further worsen a patient's condition, and is associated with poorer overall survival.⁴

Nutrition is an integral part of cancer treatment

There is no scientific evidence to suggest that dietary restriction, such as eating carbohydrates (including sugar), dairy products or chicken, causes or exacerbates cancer. Avoiding foods with high nutrition values, such as whole grains, soy-based foods, dairy products and meat, may increase the risk of malnutrition, hence compromising the immune system, increasing the risk of infection and resulting in undesirable treatment outcomes. Instead, eating a well-balanced, diet with a variety of foods before, during and after treatment can help patients with cancer avoid weight loss and achieve an appropriate nutritional status.

Proper nutrition can help patients with cancer⁵:

- Maintain body weight and muscle mass
- Keep up their strength and energy
- Better tolerate cancer treatment-related side effects
- Lower their risk of infection
- Heal and recover faster
- Have a better sense of well-being

Nutritional strategies to improve patient outcomes

Higher than normal protein and energy intake is recommended to prevent cachexia in patients undergoing treatment for cancer or who find themselves unintentionally losing weight.³ A higher daily intake of 1.5g protein and 35kcal/kg body weight is recommended for patients with cancer, whereas only 1g protein and 20–25kcal/kg body weight is

recommended for a healthy adult.⁶ A diet high in protein and energy may also improve QoL for patients with cancer and improve overall survival.³

Good sources of high quality protein include fish, poultry, meat, eggs, dairy products, nuts and nut butter, dried beans and lentils, and soy products.⁵ Patients can add extra energy to their diets by adding appropriate amounts of 'healthy fats' (ie, monounsaturated or polyunsaturated fatty acids) in their cooking, such as olive, canola and corn oils. They can also use soft margarine or nut spreads on bread. Small, frequent meals, with additional snacks in-between meals, are encouraged for those patients with poor appetite/oral intake.

As some patients may have difficulty in chewing and swallowing during or after cancer treatment, high-calorie desserts, such as black sesame sweet soup and milk and egg custard, are good options as they can be easily swallowed and can increase energy and protein intake. For those patients with a poor appetite and at risk of malnutrition, oral nutritional supplements, such as immunonutrition formula, may be considered under the instruction of healthcare professionals.

Conclusion

Good nutrition practices can help patients with cancer maintain weight, muscle mass and strength. Good nutrition can also help patients with cancer better cope with the adverse effects of cancer treatment, recover faster and improve QoL.

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