

## MANAGEMENT OF RADIATION-INDUCED ORAL MUCOSITIS USING AN AYURVEDA PREPARATION – A CASE REPORT

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### ABSTRACT

Oral mucositis is a frequently occurring and debilitating complication of radiation therapy for head and neck cancer. This is a case report of oral mucositis in Head and Neck Squamous Cell Carcinoma reported after 14 fractions of radiotherapy. Chief complaints were ulceration of mouth with painful swallowing. Sesame seeds were crushed and mixed with honey and made into a paste and applied on the ulcers and mixed with water and used as *Gandusha* twice daily. Ulcers were reduced considerably within 7 days and radiotherapy was restarted and completed 22 fractions. This case report suggests that using Sesame and Honey Gandoosha intervention may be the beneficial as an alternative treatment for mucositis in cancer patients undergoing radiation treatment.

### Keywords:

### INTRODUCTION

Head and neck cancer is usually used to denote squamous cell cancer which is predominantly seen in the oral cavity, oro-pharynx, naso-pharynx, hypo pharynx, larynx and sinonasal tract. Head and neck cancers in India accounted for 30% of all cancers. In India, 60 to 80% of patients present with advanced disease as compared to 40% in developed countries.<sup>1</sup>

Radiation-induced oral mucositis (RIOM) is one of the main radiation toxicities and tissue injuries associated with radiotherapy. RIOM was first termed in 1980 as a side effect of radiotherapy (RT) in cancer patients. RIOM is a normal tissue injury lasting between 7 and 98 days, which start as an acute inflammation of oral mucosa, tongue, and pharynx after RT exposure. Incidence of Grade 3–4 mucositis may be up to 40%–55% depending upon type of radiotherapy

and concomitant use of chemotherapy. The severity of oral mucositis is high in patients having primary tumors in the oral cavity, oropharynx or nasopharynx. Use of concurrent chemotherapy, total radiotherapy dose >50Gy, altered fractionation radiation schedules (e.g., more than one radiation treatment per day) are known to increase the incidence and severity of oral mucositis.<sup>2</sup>

Lesions of oral mucositis are extremely painful and can affect the eating habits of the patient resulting in nutritional deficit and also cause local and systemic infections. Mucositis also limits the patient's tolerance to radiation therapy and significantly alter patient's quality of life (QoL). Severe oral mucositis can also compromise optimal cancer therapy dosage regimens. The disruptions in cancer treatment due to oral com-

plications can directly affect survival rates of the cancer patients. Mucositis score is used to measure and convey the toxicity of a particular therapy which serves as a nursing management tool and is used to determine the efficacy of new treatments for the condition. The commonly used assessment tools are the World Health Organization (WHO) grading, Radiation Therapy Oncology Group grading, Oral Mucositis Assessment Scale and The National Cancer Institute Common Toxicity Criteria.

### Case Presentation

A 46-year-old female patient, who is a known case of Head and Neck carcinoma oropharynx was presented at PS Varier's Arya Vaidyasala Ayurvedic Medical College Outpatient department with the complaint of ulceration in oral cavity. She developed the complaint after 14<sup>th</sup> fraction of radiotherapy and discontinued treatment.

**Examination:** Oral mucosa was hyperemic and congestion was seen on posterior aspect of soft palate. Buccal mucosa having ulceration and yellowish deposits with offensive smell. Tongue was reddish and

dry. Small ulcerated patches were seen. On upper surface, there were dark bluish patches. WHO grading was Grade 3.

### Intervention

The patient was advised to take 5g crushed sesame seeds with 15ml honey mixed and churned into a paste and dispensed mixed with water and used as *gandoosha* three times daily. The symptoms were graded based on intensity and duration of symptoms from no symptoms to severe symptoms using a 0 to 3 grading scale. In this case comprised of ulcers on the tongue and throat with painful **swallowing 3** and pain radiating to ears on **swallowing 3**.

### Outcome

At the end of 7 days of treatment the WHO scale showed a significant reduction of 3 to 1 which was mild mucositis. The symptom of ulcers and painful swallowing reduced from 3 which were severe to 0 which was absence of symptoms. The symptom of pain radiating to ears also showed complete remission. This is evidenced in the before treatment and after treatment photographs.



Before treatment



After 7 days

After 2 weeks of treatment, the patient restarted radiotherapy and continued till 22 fractions.

### DISCUSSION

Conventional management of oral mucositis has been largely palliative to date. In this case, Ayurvedic combination of *Sesamum indicum* (Tila) and honey were prescribed and it resolved the mucositis (WHO Grade 3) within 7-14 days, whereas usually Grade 3 mucositis takes 3–6 weeks to resolve. Oral mucositis is a common, debilitating complication of cancer

chemotherapy and radiotherapy. The development of Grade 3 mucositis warrants stoppage of radiotherapy as further injury to the mucosa causes its permanent damage. It has been demonstrated that patients with oral mucositis are significantly more likely to have severe pain and a weight loss of  $\geq 5\%$ .

Honey is a heterogeneous mixture of proteins, flower nectar sugars, and glandular secretions produced by

honey bees. It has a powerful impact on the proliferation of B-lymphocytes and T-lymphocytes and also in the activation of macrophages. It inhibits inflammatory process by inhibiting cyclooxygenase pathway because it is the main pathway of inflammation. It stimulates the process of granulation tissue, angiogenesis, rapid epithelization and proliferation of fibroblasts. Certain enzymes, phytochemical agents (methyl glyoxal and methyl syringate), low pH, defensin, a peptide, and high osmolarity are distinct mechanisms involved in the bactericidal activity of honey.<sup>3</sup> Sesamumindicum extract has proven antiulcer property in rabbits in mucosal ulcers. Sesamum oil has shown preventive properties in oral mucositis induced by chemo radiation therapies.<sup>4</sup> This case shows the utility of Ayurvedic medicines to treat radiation-induced mucositis. They can help reduce the symptom burden, thereby improving quality of life of the patients and compliance to radiation treatment. Honey and *Tila Gandoosha* can help reduce unscheduled radiation treatment breaks, which prolong the total radiation treatment time, compromises on the efficacy of therapy and results in diminished treatment outcomes as well as reduced QoL. Economic burden is also a major issue. The per patient incremental cost of Grade 1–2 oral mucositis is estimated to be \$1700 and that of Grade 3–4 oral mucositis can rise upto \$6000. Reduction in days of hospitalization due to mucositis and costs can be effectively managed through the present treatment.

## CONCLUSION

Ayurveda can play a key role in treatment of radiation-induced mucositis, thereby reducing radiation treatment breaks, days of hospitalization, improving adherence to radiation therapy. Further studies on appropriate sample are required to establish the efficacy of Honey and *Tila gandoosha* intervention in radiation-induced mucositis patient.

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