

# Abstracts - Mucositis

[Support Care Cancer](#). 2013 May;21(5):1421-8. doi: 10.1007/s00520-012-1684-4. Epub 2012 Dec 8.

## Effect of low-level laser therapy on patient reported measures of oral mucositis and quality of life in head and neck cancer patients receiving chemoradiotherapy--a randomized controlled trial.

[Gautam AP](#), [Fernandes DJ](#), [Vidyasagar MS](#), [Maiva AG](#), [Nigudgi S](#).

### Source

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### Abstract

#### PURPOSE:

Chemoradiotherapy (CRT)-induced oral mucositis (OM) adversely affects a patient's oral functions and quality of life (QOL). Low-level laser therapy (LLLT) showed some preventive and curative effects against clinically reported objective measures of OM in few trials including our recently published study. There is dearth of evidence regarding the effects of LLLT on patient's subjective experience of OM and QOL. Hence, we did this study to evaluate the effects of LLLT on a patient's reported measures of OM and QOL in head and neck cancer (HNC) patients receiving CRT.

#### METHODS:

This triple blinded study randomized 220 HNC patients scheduled for CRT (three weekly Cisplatin + RT = 66 Gray (2 Gy/session), five fractions/week for 6.5 weeks, total 33 fractions) into laser (110) and placebo (110) groups. The laser group received LLLT (Technomed Electronics Advanced Laser Therapy 1000, He-Ne,  $\lambda = 632.8$  nm, power density = 24 mW/cm<sup>2</sup>, dosage = 3.0 J at each point, total dose/session = 36-40 J, spot size 1 cm<sup>2</sup>, irradiation time/point 125 s) before each radiation session, while the placebo group did not receive laser therapy. Methodology was similar to our recently published study (Gautam et al. *Radiother Oncol* 104:349-354, 2012). In this part of our study, a blinded assessor collected subjective outcomes of the patient's reported measures of OM using Oral Mucositis Weekly Questionnaire-Head and Neck (OMWQ-HN) and QOL using Functional Assessment of Cancer Treatment-Head and Neck (FACT-HN) Questionnaire. Data were analyzed using repeated measure ANOVA through general linear model. Statistical significance was kept at  $p < 0.05$ .

#### RESULTS:

Results analysis revealed that OMWQ-HN ( $F = 12.199$ ,  $df = 6,1314$ ,  $p < 0.001$ ) and FACT-HN ( $p < 0.05$ ) scores were significantly lower in LLLT than placebo group patients. Also, a significant reduction ( $p < 0.001$ ) in incidence of severe OM, need for opioid analgesics, and total parenteral nutrition was observed.

#### CONCLUSIONS:

LLLT was effective in improving the patient's subjective experience of OM and QOL in HNC patients receiving CRT.

## **Amelioration of oral mucositis pain by NASA near-infrared light-emitting diodes in bone marrow transplant patients.**

[Hodgson BD](#), [Margolis DM](#), [Salzman DE](#), [Eastwood D](#), [Tarima S](#), [Williams LD](#), [Sande JE](#), [Vaughan WP](#), [Whelan HT](#).

### **Source**

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### **Abstract**

#### **PURPOSE:**

This study seeks to investigate the use of extra-orally applied near-infrared phototherapy for the reduction of oral pain secondary to chemotherapy- and radiation therapy-induced mucositis in adult and pediatric hematopoietic stem cell transplant (HSCT) patients.

#### **METHODS:**

Eighty HSCT patients were divided into regular (R) and low (L) risk groups, then to experimental (E) and placebo (P) groups, resulting in four groups (ER, EL, PR, PL). Experimental subjects received 670 ( $\pm 10$ ) nm gallium-aluminum-arsenide light-emitting diode device for 80 s at  $\sim 50$  mW/cm<sup>2</sup> energy density and power exposure of 4 J/cm<sup>2</sup>. Placebo patients received the same procedures, but with a placebo phototherapy (identical device but  $< 5$  mW/cm<sup>2</sup> energy density). Patients received their respective light therapy once per day starting on the day of the HSCT (day 0) and continued through day +14. Blinded evaluators examined the patients three times per week and scored their oral tissues and patient-reported pain assessments at each evaluation utilizing the WHO, NCI-CTCAE, and OMAS scales.

#### **RESULTS:**

Analysis of the mean scores at each observation demonstrate that the extra-oral application of phototherapy resulted in a significant reduction in patient-reported pain between the ER and PR patients ( $p < 0.05$ ) at day +14 when graded via the WHO criteria. The ER and EL patients were improved in almost all other categories and assessment scales, but the differences were not statistically significant.

#### **CONCLUSION:**

Phototherapy demonstrated a significant reduction in patient-reported pain as measured by the WHO criteria in this patient population included in this study. Improvement trends were noted in most other assessment measurements.

## **Efficacy of He-Ne Laser in the prevention and treatment of radiotherapy-induced oral mucositis in oral cancer patients.**

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### **Source**

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### **Abstract**

#### **OBJECTIVE:**

The objective of this study was to evaluate the efficacy of low-level lasers for the prevention and treatment of radiotherapy-induced oral mucositis in oral cancer patients.

#### **MATERIAL AND METHODS:**

Twenty-four hospitalized patients with oral cancer, scheduled to undergo radiotherapy at KMC, Manipal, were enrolled in the present study and assigned to laser (Group I)/control group (Group II). They were treated using He-Ne laser ( $\lambda = 632.8\text{nm}$ , output = 10 mW and energy density =  $1.8\text{ J/cm}^2$ ). Patients were subjected to treatment using laser scanner for 8 days and subsequently were treated using laser probe at 6 anatomic sites in the oral cavity for 5 minutes each. The patients were evaluated on each day of treatment for pain severity (NRS), functional impairment (FIS), and oral mucositis (RTOG) and were followed until the end of cancer treatment. Statistical analysis was done using SPSS version 10.

#### **RESULTS:**

Laser therapy applied prophylactically during radiotherapy can reduce the severity of oral mucositis, severity of pain, and functional impairment.

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## **Effect of low level helium-neon (He-Ne) laser therapy in the prevention & treatment of radiation induced mucositis in head & neck cancer patients.**

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### **Source**

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### **Abstract**

#### **BACKGROUND & OBJECTIVES:**

Oral mucositis is a common debilitating complication of radiotherapy occurring in about 60 per cent of cancer patients. Considerable buccal toxicity of radiotherapy or chemotherapy in cancer patients to become discouraged and can affect their quality of life. In addition, such toxicity can alter the treatment plan. At present, there is no clinically appropriate prophylaxis efficacious antidote for mucositis. The low level laser (LEL) appears to be a simple, non-traumatic technique for the prevention and treatment of radiation induced mucositis. Therefore the present study was carried out to find out the effect of low-level helium-neon (He-Ne) laser in the prevention and treatment of radiation induced mucositis in head and neck cancer patients.

#### **METHODS:**

The patients with carcinoma of oral cavity with stages II-IV a being uniformly treated with curative total tumour dose of 66 Gy in 33 fractions over 6 wk were selected for the study. The patients were divided based on computer generated randomization into laser (study group) and control groups with 25 patients in each group. Both study and control groups were comparable in terms of site of the lesion, stage of the cancer and histology. The study group patients were treated with He-Ne laser (wavelength 632.8 nm and output of 10mW) and control group patients were given oral analgesics, local application of anaesthetics, 0.9 per cent saline and povidine wash during the course of radiotherapy.

#### **RESULTS:**

All patients tolerated the laser treatment without any adverse effect or reactions. The result showed a significant difference in pain and mucositis ( $P < 0.001$ ) between the two groups. At the end of radiotherapy (after 6 wk) mean pain score and mucositis grade were significantly lower ( $P < 0.001$ ) in the study group compared to control.

#### **INTERPRETATION & CONCLUSION:**

The low-level He-Ne laser therapy during the radiotherapy treatment was found to be effective in preventing and treating the mucositis in head and neck cancer patients. Further studies need to be done on a larger sample to find the mechanism.

Comment in: [Low level laser therapy \(LLLT\): a new paradigm in the management of cancer therapy-induced mucositis ?](#) [Indian J Med Res. 2006] Low level laser therapy (LLLT): a new paradigm in the management of cancer therapy-induced mucositis ? [Bensadoun RJ](#). *Indian J Med Res.* 2006 Oct; 124(4):375-8.

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## **Low energy Helium-Neon laser in the prevention of oral mucositis in patients undergoing bone marrow transplant: results of a double blind randomized trial.**

[Cowen D](#), [Tardieu C](#), [Schubert M](#), [Peterson D](#), [Resbeut M](#), [Faucher C](#), [Franquin JC](#).

### **Source**

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### **Abstract**

#### **PURPOSE:**

To evaluate the efficiency of Helium-Neon (He-Ne) laser in the prevention of oral mucositis induced by high dose chemoradiotherapy before autologous bone marrow transplantation (BMT).

#### **METHODS AND MATERIALS:**

Between 1993 and 1995, 30 consecutive patients receiving an autologous peripheral stem-cell or bone marrow transplant (BMT) after high dose chemoradiotherapy were randomized to possibly receive prophylactic laser to the oral mucosa after giving informed consent. Chemotherapy consisted of cyclophosphamide, 60 mg/kg intravenously (I.V.) on day (d)-5 and d-4 in 27 cases, or melphalan 140 mg/kg I.V. on d-4 in three cases. Total body irradiation (TBI) consisted of 12 Gy midplane dose in six fractions (4 Gy/day for three days). He-Ne laser (632.8 nm wavelength, power 60 mW) applications were performed daily from d-5 to d-1 on five anatomic sites of the oral mucosa. Oral examination was performed daily from d0 to d + 20. Mucositis was scored according to an oral exam guide with a 16 item scale of which four were assessed by the patients themselves. Mean daily self assessment scores for oral pain, ability to swallow and oral dryness were measured. A daily mucositis index (DMI) and a cumulative oral mucositis score (COMS) were established. Requirement for narcotics and parenteral nutrition was recorded.

#### **RESULTS:**

The COMS was significantly reduced among laser treated (L+) patients ( $p = 0.04$ ). The improvement of DMI in L+ patients was also statistically significant ( $p < 0.05$ ) from d + 2 to d + 7. Occurrence and duration of grade III oral mucositis were reduced in L+ patients ( $p = 0.01$ ). Laser applications reduced oral pain as assessed by patients ( $p = 0.05$ ) and L+ patients required less morphine ( $p = 0.05$ ). Xerostomia and ability to swallow were improved among the L+ patients ( $p = 0.005$  and  $p = 0.01$ , respectively). Requirement for parenteral nutrition was not reduced ( $p = \text{NS}$ ).

#### **CONCLUSION:**

Helium-Neon laser treatment was well tolerated, feasible in all cases, and reduced high dose chemoradiotherapy-induced oral mucositis. Optimal laser treatment schedules still needs to be defined.

