

Notes by Joan B. Martin MD

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LOW LEVEL LASER REDUCES THE SEVERITY OF RADIOTHERAPY INDUCED ORAL MUCOSITIS AND XEROSTOMIA

Ana Ortega Lopez MD, Univ. of Hawaii Pathology Residency Program, originally from Spain

- Studies directed by Dr. Josepha Rigau
- Mucositis and xerostomia are common reasons to have to halt radiotherapy or decrease the dose
- Many topical drugs, oral drugs have been tried
- Soft laser therapy (InGaAlP laser) 685 nm, 50 mW, output power mw, application size 2J/cm²
- 3 application points on jaw, 2 buccal mucosa each side, 3 pharynx, 4 on tongue
- No application points over the tumor, did not want to activate
- 60 patients
- Radiotherapy daily 1.8-2.0 Gy, total dose 45-72 GY
- Many received cisplatin weekly therapy
- Done in Brazil, randomized
- Most had squamous cell cancer
- Used a grading of oral mucositis, done weekly (NCI scores)
 - 0=none
 - 4=life-threatening
- Used a pain score, 1-10
- Salivary flow rate was measured at day 1 (basal, day 15, at end of treatment, and 15 and 30 days after TX was completed
- Statistical analysis

Results:

- NCI scores: baseline approx 0.3, without laser was 2, and less than one with laser
- Pain scores 2 without laser, 0.7-0.9 with laser throughout the treatment
- Salivation: without laser had significant decreased saliva production, treated with laser maintained their salivary flow rate
- Stimulated salivary flow rate: same results

Pathology slides:

- See more atrophy of salivary gland cells and larger loss of acini if no laser therapy is given
- Radiotherapy alone: pathology shows more chronic inflammation than those who received laser treatment
- Less fibrosis, more serous cells with laser

One-year follow-up:

- Radiotherapy alone: loss of salivary flow has been permanent
- With laser therapy: have been able to maintain their salivary flow

- Plan to follow these patients for six years

Conclusions:

- The incidence of xerostomia is significantly reduced in patients treated with radiotherapy with laser
- The use of laser in combination with radiotherapy decreases the severity of oral mucositis
- The pain associated the oral mucositis is also reduced significantly in patients treated with radiotherapy with laser

Discussion:

- Did you try to treat the cancer? No, because clinical experience suggests that the laser activates the cancer.
- Work in rats: can use ankophorin (sp?) to restore salivation knocked out by radiotherapy
- How did you choose the target spots? Followed the same pattern of previous studies. It is the idea of the vascular areas that supply the glands.
- Would this work after the radiotherapy is complete? Harry Wayland has not a similar study with children, use a light box externally on the outside of the cheek, use in pt. with any kind of cancer but who develop xerostomia after radiation, they have had very good results
- Paul Bradley: many groups are working on this, but this study shows treating the salivary glands directly. The French have treated the patient before the radiotherapy begins and have found a protective effect. In this study the principal investigator is a radiotherapist so he does not see them before.
- Paul Bradley: Russian Skibelkin has done animal studies: laser can treat cancer. Mikilov: cancer of esophagus: radiotherapy, no TX, LLLT; the LLLT group did the best but were creative in watching and treating the immune system, would irradiate the spleen etc.