CO₂ Laser Treatment of Ulcerative Lesions in Head and Neck Cancer Patients

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Abstract: This article describes the use of CO₂ laser in order to reduce severe pain in the treatment of oral aphthosis. The patients, presenting radiation-induced oral aphthosis, reported immediate pain relief and rapid healing. The CO₂ treatment technique is described.


Aphthosis ulceration is one of the the most common lesions affecting the oral membranes.¹ Although the cause of these lesions is not clear, several etiological factors have been identified, such as immunological, nutritional, stress-related, and traumatic.¹ The ulcerative lesions demonstrate similar clinical symptoms, regardless of their etiology.

According to the literature, anesthetic mouthwashes and pastes are the treatment of choice for such lesions.² Since the chief active ingredient of the pastes and mouthwashes is local anesthetic, the pain recurs soon after the patient leaves the clinic. In severe cases, topical or systemic steroids are advised.¹,²

More than 300 new patients a year, receiving radiation therapy in the head and neck region, are referred to our clinic. Radiation aphthosis is the main side effect of irradiation in the oral cavity. The entire oral mucosa can be affected: lips, buccal mucosa, lingual mucosa, the hard and soft palate, and the tongue. Due to the ulceration, swallowing, mastication, and speech are impaired.

In a case in which the patient is in risk of dehydration, it may be necessary to interrupt the radiation therapy, which is highly inadvisable.³ In order to restore basic oral functions, relieve pain, and continue the radiation therapy, we use the CO₂ laser.

CASE 1

A 52-year-old male presented with squamous cell carcinoma originating in the left maxillary sinus. This patient underwent excenteration of the left eye, and was fitted with an external eye prosthesis (Fig 1). He received radiation therapy to the field that includes the oral cavity. Major side effects began at 20 Gy irradiation. This impairs the patient’s basic oral functions. He was unable to eat, drink, swallow, and talk, and all daily activities became almost impossible. Radiation-induced lesions are very painful, which in many cases results in discontinuing radiation therapy due to malnutrition and dehydration of the patient. Clinical examination revealed ulcerative lesions on the lips, tongue, and buccal mucosa (Fig 2).

A CO₂ laser (Opus 20, Lumenis; Netanya, Israel) was used with a wavelength of 10.6 nm, continuous wave at 1.0 to 1.5 W, and an angulated handpiece (unfocused). Elmex gel (GABA; Basel, Switzerland) was
placed on the lesion in order to reduce the beam absorption by the soft tissue. Elmex gel is a preparation for caries prophylaxis and hypersensitivity of tooth necks. It is transparent, and has high water content. Other gels with the same properties can be used. The lesions should be irradiated with circular motion for 5 s (Fig 3). Usually, anesthesia is not required. The patient reported immediate pain relief. Recall examination 14 days after lasing (Fig 4) shows healing of the lesions.

**CASE 2**

A 57-year-old male was diagnosed with squamous cell carcinoma of the mandible. He was treated with irradiation in a field including the neck and oral cavity. Major
side effects begun at 30 Gy irradiation. The patient was unable to speak and swallow (which resulted in malnutrition), and suffered severe pain (Fig 5). A CO2 laser (Opus 20) was used (10.6 nm wavelength, continuous mode in a circular motion). A transparent gel (Elmex gel) was placed prior to laser application.

After 3 days, the lesions on the tongue were smaller, and pain was absent. Immediately after treatment, the patient reported no pain. The healing process was checked 10 days post-treatment, and revealed healing of the lesion (Fig 6).

DISCUSSION

The cases which were presented illustrate the advantages of this treatment technique. Pain relief is immediate and long lasting. In the irradiated patient, management of such oral lesions is very important; otherwise, they might be a significant limiting factor in cancer therapy and may delay further treatment. The conventional strategy is to reduce pain, but this is not very effective. Some authors have suggested using cytokins to treat mucositis,4 but this approach remains controversial. It has been suggested by Bensadoun,5 Ciasis,6 Marei,7 and Matsumoto2 that the use of low-energy laser treatment for oral mucositis enhances soft tissue healing and is accompanied by growth factor release.

In our experience, laser irradiation provides immediate pain relief. It may also reduce the healing period, and the lesions do not usually recur at the same site.

Therefore, we find this treatment very effective for the treatment of ulcerative lesions, especially in radiation-therapy patients.

REFERENCES


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