INTRODUCTION

Possibility, by several drugs, to produce, as collateral effect, gingival overgrowth, is largely described in literature \(^1,2\) since 1939, when Kimball, reported for the first time the case of a hyperplasic modification in the gum of an epileptic patient treated with Dilantin. Actually, the agents causing gingival hyperplasia belong to three categories: anticonvulsivants (Phenytoin), immunosuppressant (Cyclosporine A) and calcium channel blockers for cardiovascular disease. \(^3\)

The last belongs to the so called “calcium channel blockers” and its main action is to stop the passage of Ca++ ions through the membranes of the muscular cells of vessels and heart without modifying the haematic level of the calcium; in this way the contractile processes of the main arteries and coronaries are inhibited. \(^4-6\)

Gingival overgrowth normally appears within 1-3 months after the start of therapy, beginning from the interdental papilla; \(^7\) clinical manifestation usually is similar with different type of drugs, even if some authors reported a more lobulated and hyperaemic gingival for patients treated with Cyclosporin A. \(^8\)

Histopathologic characteristics of gingival lesions are very similar independently from the drug assumed, and they consist in an excessive accumulation of extracellular matrix proteins (e.g. collagen) or amorphous ground substance, with a connective tiss-wise response more implicated than epithelial cell layer involvement; \(^9\) it is also always present a lympho-plasmocitary infiltrate, typical of chronic inflammation even when an acute flogosis, due to the bacterial plaque in the sulcular areas, is associated. \(^10,11\)

In these conditions, when the anamnestic investigation leads to the hypothesis of a relation between the agent assumed and the conditions of gums, it is mandatory to contact the specialist who prescribed the agent in order to substitute this drug with another, if possible.

The surgical therapy is not easy, due to the particular general clinical situation of these patients: \(^12\) even if, in most important cases conventional intervention by scalpel must be done during hospitalization in order to have a control of bleeding because, in this kind of patient, risk is very high, \(^13,14\) several authors proposed also the use of laser surgery in alternative to conventional intervention: less bleeding and pain, easier post-operative period, much less wound contraction and scarring are the advantages of this technique vs. scalpel. \(^15\)

Use of several different wavelengths to treat gingival overgrowth, such Argon, Nd:YAG, Diode, Er,Cr:YSGG, Er:YAG and CO2 has been reported in several works, \(^16-18\) but in the case below described we decided to use Carbon Dioxide Laser, considering the importance of the lesion, the age of the patient and his general health conditions. \(^19\)

CO2 is a gas active medium laser which emits a beam of 10600 nm, in region of far infrared spectrum, with a great affinity for water and, even if it

**CO2 LASER TREATMENT OF DRUG-INDUCED GINGIVAL OVERGROWTH - CASE REPORT -**

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generally has a delivery system by articulated arm, it can also be distributed by hollow fibbers; the great advantage of this laser is that it can emit in CW (Continuous Wave), in Pulsed Mode and also in Superpulsed Mode and this last way allows to control thermal elevation in target tissue. In this case we decided to utilise it in two modalities, superpulsed to make ablation and CW to produce coagulation in the tissue.

**CLINICAL CASE**

Patient DL, 75 years old male, came to the hospital for a great inflammation of gum and, at clinical observation, it was appreciated a situation of gingival overgrowth with oedema and bleeding of the gum, associated to poor oral hygiene conditions. The patient told he had a great discomfort related to eating.

Clinical history of the patient revealed he was in treatment by several years with Nifepidine to control his chronic hypertension and his medical doctor was soon contacted in order to take in consideration to change the drug; according with patient, a laser-assisted surgical intervention was chosen to reduce the hypertrophy of the gum.

Considering the age of the patient, his general conditions and the state of great inflammation and bleeding of the gums, we decided to use CO2 laser, in order to have a great coagulation of the wound; before intervention patient was treated by dental hygienist and instructed to maintain an adequate oral hygiene.

The intervention was made in three sessions, with an interval of one week between every session and the laser appliance used was Miran 25 Mediclase (Israel).

Before every session anaesthesia of the area of intervention was obtained by injection of a phial of carbocaine; then, a first passage to make ablation of the hypertrophic tissue was applied in Superpulsed Mode (10 W, 250 Hz, 300 µsec pulse duration), followed by a second passage performed in CW (4 W) to make coagulation in order to reduce bleeding and avoid use of suture.

A sample of the excised gum was sent to pathologist in order to make histological examination: diagnosis of gingival hypertrophia was confirmed also from a histological point of view.

After intervention no drugs were prescribed to patient and evaluation of pain, made by a form filled by the patient, showed the absence of any significant postoperative problem; the complete healing process was observed after three weeks and the observations made monthly did not show any relapse, even if the very poor hygienic conditions of the patient.

We may conclude that the use of CO2 superpulsed laser is a great opportunity to treat important pathological situations of gum, even in patients with general health problems with success and comfort of patients.
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Fig. 3: Samples to pathological examination

Fig. 4: Patient before the second surgical session

Fig. 5: Patient after second surgical session

Fig. 6: Patient after third surgical session

Fig. 7: Patient one month after last intervention

Fig. 8: Patient one year after intervention
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References