Treatment of Xanthelasma Palpebrarum With the Pulsed Dye Laser

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***Background of Objective*: Treatment of xanthelasma palpebrarum may prove difficult due to its delicate location at the periorbita and its sometimes extensive dimension. During recent years, carbon dioxide and argon lasers have been used with good results. However, local anesthesia is always required, and there is a concrete risk of scarring and pigmentation changes after the treatment.**

***Study Design/Patients and Methods*: In this case report, we describe for the first time the treatment of xanthelasmas with the pulsed dye laser.**

***Results*: This technique can be carried out without anesthesia and shows excellent cosmetic results.**

***Conclusion*: We see the pulsed dye laser as a good alternative to the hitherto used other two laser types in the treatment of xanthelasma palpebrarum.**

Key words: cosmetlc surgery, xanthoma, xanthomatosis, dermatologic laser therapy

INTRODUCTION

Xanthelasma palpebrarum is the most common type of xanthoma. To date, it is not absolutely clear, if xanthelasma is associated with hyperlipidemia or with a decreased serum level of high-density lipoprotein cholesterol, thereby leading to a higher risk of cardiovascular disease [1-5]. Xanthelasmas can erupt from early childhood until late adulthood with a slightly female gender preference [6]. The typical yellowish lesions seen on the upper and lower eyelids may become extensive and extremely disfiguring [7,8]. The treatment recommended to date has been surgical excision [9,10], local treatment with trichloroacetic acid [11,12], or laser therapy, using the carbon dioxide [13-15] or the argon laser [16]. All of the mentioned methods have some disadvantages, including the risk of scarring or postoperative dyspigmentation, chemical irritation of the conjunctivae, or the need for systemic or local anesthesia. We describe for the first time the treatment of xanthelasma palpebrarum with the pulsed dye laser. This regimen may combine all the advantages of the other laser strategies with a minimum of pen- and postoperative risks.

MATERIAL AND METHODS

A 45-year-old female patient with marked xanthelasma at the upper right eyelid was treated with the pulsed dye laser. The disfiguring lesions had existed for 5 years and showed a slow progression. The yellowish lesions located near the inner canthus were slightly elevated (2 mm) with a diameter of 8 mm (Fig. 1). The patient was normolipidemic and showed no other clinical manifestation of a systemic disease. The treatment was carried out with a flashlamp-pulsed dye laser (Photo Genica V, Cynosure, Inc., Boston, MA). The wavelength was set to 585 nm, and the impulse diameter of the handset was 5 mm (maximum power 4.4 kW). At the beginning of the treatment a trial with only few impulses was carried out (impulse length 300-450 µsec, impulse diameter 5 mm). The initial energy dose was 7 J/cm2, which was maintained during all of the four consecutive treatment sessions. The other sessions, during which the whole area was treated, were carried out every 2 weeks.

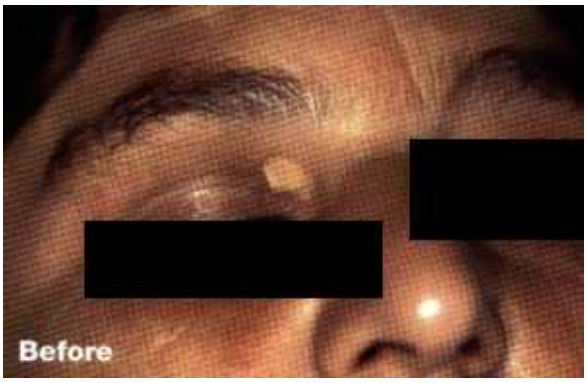

Fig. 1: Xanthelasma palpebrarum at the upper eyelid of a 45-year-old female patient before treatment.

Fig. 2: Status quo of the same patient after treatment with the pulsed dye laser. The xanthelasma is completely gone; there is no scarring or dispigmentation.

After the fifth session, the xanthelasma had completely disappeared (Fig.2). After the treatment, the inflicted area was cooled with ice cubes to prevent lid swelling. There was no need for any anesthetic measures.

DISCUSSION

Xanthelasma palpebrarum ranks with cutaneous xanthomatoses, most of which are associated with diseases of lipid metabolism. while some authors describe a close association of xanthelasmas with dyslipidemias, others do not find this relationship [1-5]. Diabetes and liver cirrhosis are other diseases which have been found to be correlated with the eruption of xanthelasma [17]. The extensive uptake of serum lipids by macrophages leads to the typical yellowish lesions. The prerequisite for this mechanism is an abnormal permeability of the capillaries. Ultrastructural analysis of xanthelasmas show typical "foam cells," i.e., histiocytes with numerous intracytoplasmatic lipid vacuoles [18]. These cells are closely attached to the wall of small vessels [19]. Xanthelasmas are the most common xanthomas. They do not have any functional significance, but may be extensive in dimension and very disfiguring [7,8]. The "classical" treatment of the lesions is the surgical excision. This method is associated with a concrete risk of scarring, especially when recurrent xan-thelasmas are treated. The scars could lead to ectropium or facial asymmetry [9,10]. The lesions could bleed significantly due to the close spatial association of the foam cells with the vessel walls. Anesthesia is always required. Extensive xanthelasmas that inflict the whole periorbital space are not treatable surgically. The chemical cauterization of xanthelasmas with trichloroacetic acid or its derivatives has not proven satisfactory due to the high risk of injuring the conjunctivae [11,12]. Laser treatment of xanthelasmas is now the treatment of choice. Carbon dioxide as well as argon lasers have been used with great success. With the carbon dioxide laser, the lesions can be carried off layer by layer under perfect visual control. However, there is a small risk of scarring if the subcutis is accidentally injured. In a few cases postoperative hyperpigmentation of the treated area has been described [13]. The alternatively used argon laser carries an even lower risk ofposttreatment scarring [14]. In most cases, local anesthesia is needed.

The exact mechanism of xanthelasma laser surgery is not fully understood. It is presumed that the caloric energy, which originates from the coagulation of the vessels within the upper conum, leads to a damage of the perivascular foam cells. The coagulation of the pathologically hyperpermeable vessels would lead to a block of the leakage of lipids into the tissue and thereby prevent recurrent lesions.

After the treatment of xanthelasma palpebrarum with the pulsed dye laser the treated area showed a blueish tinge, which originated from an intracutaneous hematoma and lasted for about 10 days. There were some crusts, which had not been removed. Two weeks after the last treatment, the lesions were completely gone without any scarring or dyspigmentation (Fig. 2). The treatment was not painful-no anesthesia was required. The postoperative swelling of the eyelids could be prevented by cooling measures (ice cubes or commercially available cooling elements).

By the non-invasive pulsed dye laser treatment without any need for local anesthesia, a pen orbital hematoma is prevented, which is a substantial aesthetic advantage over the treatment with the carbon dioxide laser. Compared to the argon laser, the pulsed dye laser is far less painful. We see the treatment of xanthelasma palpebrarum with the pulsed dye laser as a good alternative to classical surgical as well as laser surgical treatment strategies. We think that this method combines all of the advantages of the hitherto described methods. At the same time, the risks for bleeding, scarring, pain, and disappointing cosmetic results seem to be minimized.

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