Case report

ULTRAPULSE CO_2 LASER THERAPY FOR NEVUS SEBACEUS JADASSOHN

A. L. Krunić, R. E. Clark and M. M. Urošević

ABSTRACT

Background: Ultrapulse CO_2 laser could be an effective modality for the ablation of the nevus sebaceus of Jadassohn for cosmetically important areas in selected cases.

Objective: Evaluation of effectiveness and cosmetic results concerning the ultrapulse CO_2 laser ablation in 15-year old white boy with nevus sebaceus of the glabellar area.

Methods: Ablation of the nevus under local anesthesia with ultrapulse CO_2 laser, in 4 sessions spaced two months apart.

Results: An 18-month follow-up disclosed no recurrent diseases with satisfactory cosmetic result.

Conclusion: This method produces superior results with minimal risk of scarring compared to a continuous wave CO_2 laser and classical excisional surgery. Although the risk for malignant change of nevus sebaceus on the face is very low, careful follow-ups are mandatory in order to obtain early recognition of any possible malignant change.

KEY WORDS

nevus sebaceus of Jadassohn, ultrapulse CO_2 laser ablation, cosmetic results

INTRODUCTION

Nevus sebaceus of Jadassohn (NSJ) belongs to the group of congenital organoid nevi that characteristically occurs on the scalp and face[1,2]. The overall malignant potential is reported to be between 8-12 %, with the basal cell carcinoma being the most common malignancy developing in these lesions after puberty[3]. The complete surgical excision is considered the treatment of choice, especially for the lesions located on the scalp which have the highest risk for malignant transformation[4]. The ultrapulse CO_2 laser with high energy and short pulses, achieves controlled penetration, minimal nonspecific thermal damage and char-free ablation[5] and can be a promising tool for the ablation of nevus sebaceus at the cosmetically important locations where conventional surgery may produce significant mutilation and disfigurement.

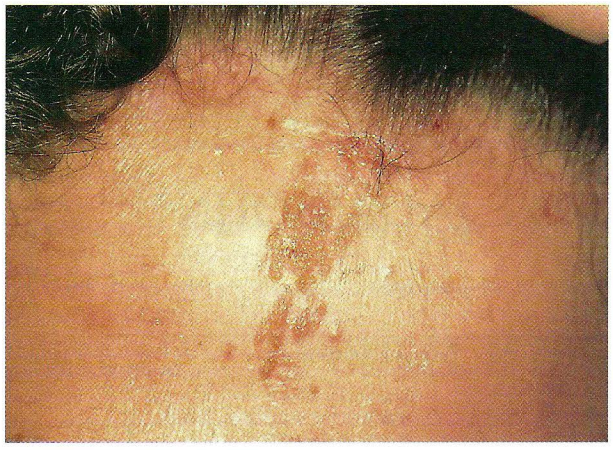

Figure 1. Nevus sebaceus on the mid forehead prior to treatment with Ultrapulse CO_2 laser.

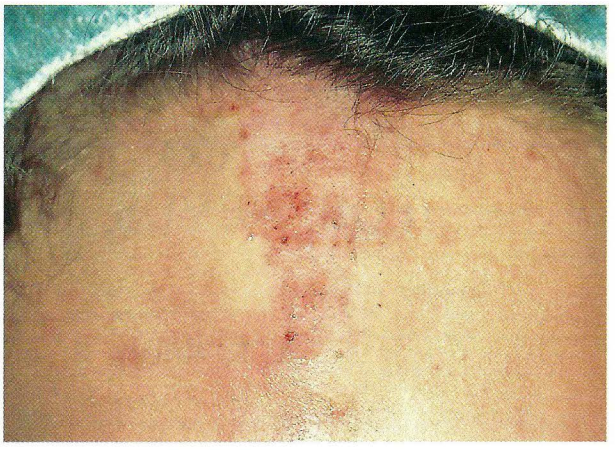

Figure 2. The treated area immediately after vaporization was completed (4th session).

CASE REPORT

We present a 15-year old white boy with the 35x15 mm linear nevus sebaceus of the glabellar area. In the infancy the lesion was flatter and pinkish. Recently it became elevated and more yellowish in color (Figure 1). The patient had no history of seizures, eye abnormalities, or impaired intelligence and was in good physical health.

Histopathologic analysis disclosed slightly acanthotic, papillomatous epidermis with increased number of sebaceus gland in the upper half of dermis. The glands were connected to rudimentary follicular infundibula, which were dilated and filled with keratin plugs. These findings were consistent with the diagnosis of nevus sebaceus.

The nevus was ablated under local anesthesia (1% lidocaine with epinephrine) with ultrapulse CO_2 laser (Coherent, Palo Alto, California), in 4 sessions spaced two months apart. The laser settings were 300 mJ energy/pulse, 50W average power, and computerized pattern generator adjusted to the density of 7, sizes from 3 to 5 and patterns of 1 and 3. Each ablation session consisted of 3 passes to the uppermost reticular dermis (Figure 2).

At twelve months after the surgery satisfactory cosmetic result with moderate postinflammatory hyperpigmentation was achieved (Figure 3). The discoloration resolved with combined use of topical hydroquinon 3% solution, tretinoin 0,05% cream and sunscreen. At eighteen-month follow-up no recurrence of the nevus was seen.

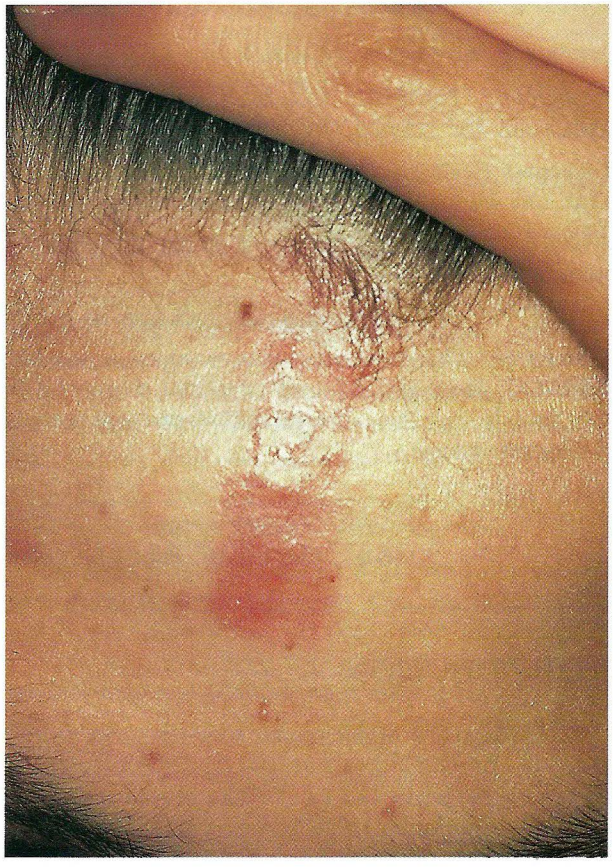

Figure 3. One year after ablation. Postinflammatory hyperpigmentation and mild pinkish discoloration is still present.

DISCUSSION

Nevus sebaceus of Jadassohn (NSJ) is considered to be a localized malformation of epidermis, pilosebaceus units and ectopic apocrine glands which develop in about two thirds of cases[1]. The natural course of NSJ evolves through different stages over time from a deficient malformation (infantile phase) to a hyperplastic sebaceus lesion as a consequence of hormones and sexual maturation (adolescent phase)[1,6]. A third stage commonly develops in adulthood where different benign adnexal tumors arise in NSJ[3]. The most frequent one is believed to be the syringocystadenoma papilliferum, which develops in 8-19% of cases [1,3]. Malignant transformation of NSJ usually occurs in scalp lesions and is considered to be much less frequent. Basal cell carcinoma is the most common malignancy observed in 5-7% of cases[3,4]. In rare instances, squamous cell carcinoma, apocrine carcinoma, and malignant eccrine poroma have developed in NSJ that led to regional and even generalized metastases[4,7].

Aside from malignant potential, NSJ may present cosmetic or functional problems by virtue of its different locations on the face[2]. For all these reasons, acceptable treatment is often desirable but not always possible. Most investigators consider surgical excision as the treatment of choice[8]. In our patient the tight skin on the forehead altogether with the size of the lesion, would necessitate repair with the advancement flap after the excision. This surgical approach would be cosmetically less satisfactory, since it carries the risk for disfiguring scar with significant impact on the psychology and self-image of the young adolescent.

Continuous CO_2 laser in nonfocused mode was also used for the ablation of NSJ[9] and epidermal nevi[10]. The ablation of NSJ, although clinically successful, resulted in hypertrophic scar on the nose[9]. Ultrapulse CO_2 laser technology[5] with controlled penetration; char-free ablation and minimal collateral termal damage produced satisfactory result in our patient, with transitory postinflammatory hyperpigmentation. The superficial nature of the lesion, the lack of the extension to the deep reticular dermis as well as the absence of the apocrine component may have been additional contributing factors to the success of treatment in our patient.

In conclusion, ultrapulse CO_2 laser presents a promising modality for the ablation of NSJ in selected cases in cosmetically important areas. The lesions with the deep apocrine component, as well as involvement of the lower half of the dermis would qualify better for surgical excision than laser ablation because the potentially higher risk of recurrence with the later. Nevertheless, even if the cosmetic result is acceptable with the laser, and the lesion superficial, surgical excision may be a better choice if a thin-line scar can be achieved.

Although the treatment with the CO_2 laser was claimed to obscure early epidermal changes, with careful and prolonged follow-ups any malignant change could be recognized and treated quickly before the tumor achieves the significant size. Also the risk of malignant transformation of NSJ on the face is considered to be low[3,4].

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