

CLINICAL REPORT

Assessment of Cryotherapy for the Treatment of Verrucous Epidermal Naevi

Antonios PANAGIOTOPOULOS¹, Vasiliki CHASAPI¹, Vasiliki NIKOLAOU², Panagiotis G. STAVROPOULOS¹, Kyriockos KAFOUROS³, Athanasios PETRIDIS¹ and Andreas KATSAMBAS²

¹3rd Dermatology Clinic, "Andreas Sygros" Hospital for Skin Diseases, ²Department of Dermatology, University of Athens, "Andreas Sygros" Hospital, and ³Dermatology Department, "Υγεία" General Hospital, Athens, Greece

Epidermal naevi are hamartomas that are characterized by hyperplasia of the epidermis and adnexal structures and may be associated with serious disfigurement. Management of epidermal naevi is challenging. We present here our experience with cryosurgery in the treatment of verrucous epidermal naevi. The aim of this study was to determine the efficacy and safety of cryosurgery for the treatment of epidermal naevi. Nine patients with verrucous epidermal naevi and two with extensive unilateral epidermal naevus were treated with cryosurgery. Two cycles of open spray technique were used, 10–15 sec each, depending on the size and extent of the naevus. Ten patients had their naevi treated successfully in 2–5 sessions with two cycles of therapy, and the cosmetic result was excellent with no scarring. One patient showed a relapse within 8 months after the treatment. One patient with phototype IV developed hypochromic scarring, but repigmentation occurred after 6 months. Postoperative healing time was 10–20 days. Cryosurgery is an extremely effective therapeutic modality for the treatment of epidermal naevi. The low cost, the simplicity of the technique and the good cosmetic result makes cryosurgery an excellent therapeutic modality for the treatment of epidermal naevus. Key words: verrucous epidermal naevi; ILVEN; cryosurgery.

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Vasiliki Nikolaou, Andreas Sygros Hospital, 5 Dragoumi Street, Athens GR-10671, Greece. E-mail: drviknik@yahoo.com

Epidermal naevi (EN) are hamartomas that are characterized by hyperplasia of the epidermis and adnexal structures and may be keratinocytic, follicular, sebaceous, apocrine or eccrine in origin. The most common type of epidermal naevi is the keratinocytic naevi, also called verrucous epidermal naevi. They are usually present at birth or infancy and may enlarge slowly during childhood. The naevus typically appears as verrucous papules that coalesce to form well-demarcated, skin-coloured, brownish or grey-brown, papillomatous plaques. Verrucous epidermal naevi are classified into a number of variants

depending on their clinical appearance and extent of involvement. These include localized verrucous epidermal naevus, systematized verrucous epidermal naevus, naevus unius lateris, ichthyosis hystrix and inflammatory linear verrucous epidermal naevus (ILVEN). Although the exact mechanism underlying the development of epidermal naevi is unknown, it appears likely that the disease is a mosaic disorder resulting from a post-zygotic mutation (1).

The treatment of verrucous epidermal naevi is notoriously difficult. To date, surgical excision has been the most reliable treatment. However, surgical excision may not be practical if the epidermal naevus is very extensive and, in this case, would be complicated by the potential size of the scar in the treated areas. Many different therapeutic modalities have been attempted, including topical agents, lasers, electrofulguration, dermabrasion and chemical peels with various therapeutic results (2–4). We report here our experience with cryosurgery for the treatment of epidermal naevi and outline the successful use and safety of this treatment modality.

PATIENTS AND METHODS

Eleven patients with epidermal naevi were treated in the cryosurgery department of our hospital between January 2004 and October 2005. Six male and five female patients aged 12–50 years (mean 26 years) were included. One male patient had inflammatory linear verrucous epidermal naevus on his right hand and two female patients had extensive naevus unius lateris. The remaining naevi were localized verrucous epidermal naevi located on the head and neck (6 cases), on the left foot (one case) and on the arm (one case). Histology was performed for all lesions before treatment.

Cryosurgery was performed using a liquid nitrogen spray (Cry-AC, Brymill cryogenic systems, UK). In all of the patients open spray technique was used. Patients with small, localized lesions were treated in two sessions, while those with larger lesions required more sessions. The sessions were performed at 4–6 week intervals. The number of cryosurgery sessions varied from two to five. In each session patients received double freeze–thaw cycles. Nozzle C was used for all the lesions treated. Freezing times varied from 10–15 sec, and freezing was performed with continuous spraying according to naevus size. The nozzle was kept at a distance of 1 cm from the skin during the freezing time. The thickest parts of the lesion required longer freezing times. The total thaw time and tissue temperature were not routinely recorded. Local anaesthesia with 2% lidocaine, injected subcutaneously, was used

Table I. Sex, age, location of naevus, therapeutic procedure and follow-up of the patients treated with cryosurgery

Patient number	Sex/age (years)	Location	Size (cm)	Freezing time (sec)	Sessions	Recurrence	Follow-up (months)
1 ^a	F/26	Trunk, upper limbs	ENUL	2 × 15	5	No	40
2 ^a	F/40	Trunk, upper limbs	ENUL	2 × 15	2	No	42
3	M/12	Left thigh	2 × 3	2 × 10	3	No	40
4	M/50	Neck	1.5 × 5	2 × 15	3	No	30
5	M/40	Neck	1.5 × 5.5	3 × 10	2	No	28
6	M/22	Forefinger	2 × 10	2 × 15	5	Yes	26
7	M/16	Chin	2 × 3	2 × 10	5	No	30
8	F/27	Temple	1.5 × 4	1 × 15	3	No	36
9	M/25	Arm	2.5 × 4	1 × 15	4	No	36
10	F/17	Cheek	1.3 × 4.5	2 × 15	2	No	26
11	F/12	Neck	1 × 3	2 × 15	2	No	28

^aPapillomatous lesions were treated. Patients were satisfied with the cosmetic result and did not wish to continue treatment.

ENUL: extensive naevus unius lateris.

routinely. After injection of local anaesthetic, the entire lesion and a 1 mm margin was treated. Postoperative care included oral analgesics if needed, soaking with sodium chloride 0.9% solution twice daily, topical antibiotics and corticosteroids in occlusive bandages for the first 7 days after treatment.

RESULTS

The patients' gender, naevus location, treatment modality and years of follow-up are shown in Table I. The mean time for complete healing after the procedure was 15 days. In all patients the area healed without incident (Fig. 1). Patients were followed-up for a mean of 33 months. No recurrence was noted, apart from a minimal recurrence in the thumb region in patient number 6, 8 months after the last treatment. This area was treated with a single session. One patient developed hypochromic scarring, but repigmentation occurred with time, with a cosmetically excellent result. No other adverse effects, including scarring, were observed.

DISCUSSION

Epidermal naevi may involve any part of the body surface and may be associated with serious disfigurement. Patients with epidermal naevi usually seek treatment from dermatologists for cosmetic reasons only, as these lesions rarely become malignant (5).

Topical treatments, such as intralesional and topical steroids, topical 5-fluorouracil (5-FU) and podophyllin are usually temporary and ineffective (3). Successful management of epidermal naevi using combination therapy with topical tretinoin 0.1% and 5-FU has been described, but discontinuation of treatment resulted in recurrence (5–6). Topical calcipotriol has also been reported in treating ILVEN (8). However, there are only anecdotal reports of treatment with this anti-psoriatic agent and no long-lasting effects can be expected.

Surgical excision is most effective, but is complicated by scarring in the treated areas and is thus reserved for the smallest lesions. Meanwhile, surgical excision of widespread areas may not be feasible.

There are recent reports on laser treatment of verrucous epidermal naevi. Various studies report good clinical effect when using CO₂ laser for the treatment of epidermal naevi (9, 10). A reduced risk of lesional recurrence due to the creation of a limited and protective amount of dermal fibrosis that occurs as a result of laser skin resurfacing has also been reported (11). The short-pulsed nature of the newest systems permits precise tissue ablation, but unfavourable scarring remains a potential complication of CO₂ laser treatment. Erbium: YAG lasers provide similar precision in tissue removal, but difficulty in achieving haemostasis with these devices can make treatment impractical and scar formation can occur (12). The pulsed ruby laser effectively treats



Fig. 1. Verrucous epidermal naevi on the cheek of a 17-year-old female patient before and after two sessions of cryosurgery.

the dark-coloured epidermal naevi, but its efficacy has not been shown in unpigmented naevi (13).

Cryosurgery of benign lesions of the skin is not new. However, there are not many reports in the literature on cryosurgical excision of verrucous epidermal naevi. In 1983 Fox & Lapins (3) tried various approaches to treating epidermal naevi on one patient who had extensive, disfiguring epidermal naevus lesions. They used intralesional steroids, topical steroids with and without occlusion, topical tretinoin under occlusion, podophyllin ointment under occlusion, 5-FU under occlusion, dermabrasion and cryosurgery. They concluded that cryosurgery using liquid nitrogen was the most successful therapy.

All of our patients were treated successfully with cryosurgery. Small, single lesions responded extremely well to treatment, with minor side-effects such as oedema and blistering in the first week after treatment. Hypopigmentation developed in one patient with type IV phototype, but repigmentation occurred after 2 months without any intervention. Major side-effects or complications did not develop.

The relative ease of use and the well-accepted cosmetic results make cryosurgery a very challenging therapeutic modality for the treatment of benign lesions such as epidermal naevi. The treatment is well tolerated and patients are usually pleased with the progress. Moreover, the low cost, both for the patient and the doctor, and the relatively simple equipment needed for treatment, which can be used by any trained dermatologist, gives an advantage over newer techniques with laser devices. Contraindications include those of cryosurgery, such as cold intolerance, cold urticaria, cryoglobulinaemia and Raynaud's disease.

However, although the patients treated have not had any major recurrence to date, recurrences can occur months or years after removal of epidermal naevi and patients should be properly informed before starting a cryosurgical procedure.

Moreover, extensive lesions covering large parts of the body are difficult to treat and many sessions are needed. Patients with well-circumscribed, small epidermal naevi

are ideal candidates for cryosurgery. These lesions clear with no scarring and minimal pigment change.

In conclusion, our experience suggests that cryosurgery with liquid nitrogen is an efficacious method for the treatment of epidermal naevi. The efficacy of cryosurgery is comparable to that of mostly currently used methods, with advantages such as low social and economic cost.

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