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Treatment of Naevi and Warts by Topical Chemotherapy with Solcoderm

(with 1 colour plate)

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Abstract. Solcoderm is a new liquid caustic preparation which is particularly indicated for the topical treatment of small cutaneous tumors. The liquid is easy and safe to handle. Among its advantages: local anaesthesia is not required and histological evaluation of treated skin tumors is possible. We have treated 33 naevocytic naevi (13 patients) and 214 viral warts (32 patients) by repeated superficial application of the new agent. Recurrences were observed in 3 patients. 2 of them had multiple skin warts, suggesting a selective immune deficiency rather than incomplete treatment as the prime responsible factor.

Introduction

The new preparation, Solcoderm, is a liquid mixture of organic and inorganic acids which may be classified as a caustic chemical used to destroy selected skin tumors and superficial granulation tissue. It differs from other caustics in that it is primarily a tissue-fixing agent. Minor variations of the formulation studied here have been the subject of clinical trials since 1965 [5, 6]. Recent studies have confirmed its efficacy, mainly in the treatment of seborrhoeic warts, actinic keratosis, condyloma acuminata and basal cell epithelioma [4, 7, 8]. Besides its absolute systemic innocuity, the preparation has very little effect on collagen fibres, which reduces the risk of unsightly scars. In addition, its mummifying effect on the treated tissue permits detailed histological examination after treatment [3, 9]. In 1978, *Césarini* [3] demonstrated the integrity of fragile anatomic structures such as desmosomes and keratinosomes in the post-treatment crusts examined under the electron microscope. This report reviews our observations on the efficacy and local tolerability of this new preparation, particularly in the treatment of viral warts (n = 214) and naevocytic naevi (n = 33).

Material and Methods

Material and Mode of Action

The trial preparation is a stable aqueous solution of various acids (nitric, oxalic, acetic and lactic) and copper ions with a pH value of < 1. Live tissue proteins are fixed by covalent binding on contact with the agent, which penetrates into some types of immature or pathological cell structures more easily than into normal tissue. On contact with small blood vessels, the liquid causes swelling of the tunica intima and obliteration of the vessels, resulting in a dry necrosis, followed by the formation of granulation tissue and re-epithelialization from islets of intact viable basal cells, hair follicles or sweat glands. The skin tumor treated in this way dehydrates (mummification phenomenon), forming a crust after a few days.

Patients

During the 2 years of this study, a total of 47 patients agreed to be treated with the new substance, 32 bearing viral warts, 13 naevocytic naevi and 1 a seborrhoeic wart. 1 patient with a plantar wart has been excluded because of premature cessation of the treatment. The age average was 23.5 years (range 4–70) for patients with viral warts and 30.1 years (range 3–63) for patients bearing naevocytic naevi. Sex distribution for viral warts was 13 males and 19 females and for the naevocytic naevi, 4 males and 9 females. One single seborrhoeic wart was treated in a 74-year-old female patient. Patients with bacterial or mycotic skin infections, patients under immunosuppressive therapy or patients suffering from decompensated metabolic disease were excluded from this study.

Method of Application and Pattern of Response

Before application of the substance to the area to be treated, the skin is cleansed of grease with a cotton-wool pad soaked in alcohol. With plantar warts, the upper horny layer of the wart is first removed mechanically with a surgical knife. The skin tumor is then impregnated with the preparation with the aid of a pointed wooden or plastic stylet, until the patient feels a sensation of heat. Bleeding should be avoided. The amount of liquid applied in the course of one session should not exceed 0.25 ml. The amount used for one lesion may vary from 0.05 to 0.1 ml, according to the volume of the tumor. After treatment, the area is cleansed each morning and evening with a cotton-wool pad soaked with 70% alcohol, to prevent superinfection and to maintain the dessication. A dressing is not necessary and baths are permitted, provided they are followed by application of 70% alcohol.

Naevi. There should be confidence in the diagnosis that the lesion is benign. In case of doubt, treatment with Solcoderm should not be undertaken. The nature of naevocytic naevi (junctional, dermal or mixed) makes it possible to understand the phenomena observed following application of the new substance. When the product reaches the vascular network of the dermis, in persons of white race, one initially sees a red peritumoral halo (hyperaemia) which transforms concentrically into a white halo as vasoconstriction is induced in the tissue closest to the treated region, resulting in a rosette-like appearance. The ischaemic zone should not extend for more than 1–2 mm from the tumor. During the hyperaemic phase, the patient may have a sensation of heat or slight burning. These objective and subjective signs indicate that the amount of liquid applied is sufficient, having gone beyond the edges of the tumor. After 5–10 min the treated lesion becomes firm and contracted, eventually appearing as a crust (fig. 1, 2).

After 1–6 weeks, depending on the depth and volume of the tumor, the crust falls off, pushed away by the underlying newly formed epithelium, leaving a slight pinkish depression which disappears within a few months without a residual scar. Whenever possible, the collected crusts are examined histologically. If naevocytes persist after the crust has fallen off, the substance is applied again. The aesthetic result can be appreciated 4 or more months after treatment.

Viral Warts. The treatment procedure is different in the case of viral warts. In view of the strictly epithelial nature of such warts there is no peritumoral 'rosette', since the liquid does not penetrate into the dermis. During the impregnation the plane of cleavage between the wart and the healthy skin must be penetrated with the stylet. In this way the part of the wart which is not visible and which proliferates under the healthy epidermis is treated. After a few minutes, the true volume of the wart is defined by the whitish or yellowish discoloration caused by the treatment (there is no discoloration in the case of dark pigmented seborrhoeic warts). The wart treated in this way will fall off after 1–6 weeks, without leaving a scar. In certain cases, several applications are necessary, preferably at intervals of 1 application per week, in order to obtain complete mummification of the verrucous tissue. By examination after the crust has fallen off it is possible to identify any lesions which are not completely treated and which require further applica-

Table I. Therapeutic results obtained in the treatment of naevi and warts with Solcoderm

Type and location of tumor	Number of cases	Number of tumors		Average number of sessions (±SD)	Number of recurrences within 4 months	Cupulate scar after 4 months
		by site	total			
Naevocytic naevus						
Face		16			0	2
Trunk + limbs		16			0	1
Male genital organ		1			0	0
Total naevi	13		33	1.75±0.86	0	3/33
Seborrhoeic wart, face	1	1	1	1	0	0
Common warts						
Face	19	4	39	1.53±0.91	0	2
Limbs		35			1	0
Palmo-plantar warts						
Palmar	13	5	22	3.00±2.00	0	0
Plantar		17			0	0
Multiple common warts, hands	3	63	63	2.42±1.79	2	0
Multiple plane warts, back of hands	1	90	90	1.23±0.42	0	0
Total warts	36		214		3/36	2/214

tion of the substance. Multiple warts (more than 10 warts on the upper extremities), may all be treated in the same session (fig. 3).

After 7 applications any wart still persisting is considered refractory to the treatment. Check-up of successfully treated lesions is carried out every month for at least 4 months in order to detect recurrences. Re-appearance of the skin folds is an essential index of complete cure.

Results

The therapeutic results obtained with the new product in the treatment of naevi and warts are summarized in table I.

Patients are classified into groups according to diagnosis, anatomic location and numbers of tumors. They total 50 cases, 4 patients being affected with two types of viral warts. Patients presenting with more than 10 warts on the upper extremities are considered cases of multiple warts. The warts or naevi are grouped according to the number of applications that were necessary for their eradication, and the mean number of applications per tumor is calculated for each type of tumor.

Naevi

We treated 33 clinically diagnosed pigmented naevi (13 cases) of about 3–15 mm in diameter and from 0 up to 5 mm in height,

of which 9 were confirmed as naevocytic naevi by histological examination of the crusts brought in by the patients or collected at the time of consultation (fig. 4).

One or two application sessions (maximum: 4 sessions) were generally sufficient to eradicate these naevi. In 3 tumors there was necrosis extending beyond the volume of the treated naevus. In 1 case this was probably caused by an overdosage due to a 'reservoir' effect of the tumor (tuberous naevus about 15 mm in diameter and 5 mm high); in the other 2 cases (one naevus in the nasolabial furrow and one on the tip of the nose) a cupulated scar was present 4 months after treatment. In 4 cases (6 naevi) a brown pigmentation observed after the crust had fallen off became progressively paler in the course of a few months. In 3 other cases (3 naevi) a depigmented area was still visible after 4 months. The formation of exuberant granulation tissue, causing a swelling under the crust was seen in 2 treated tumors. Histological examination did not reveal persistence of the naevus. This granulation tissue was easily destroyed at a second application session.

Viral Warts

We treated a total of 214 warts (36 cases) measuring from 2 to 10 mm in diameter and from 0 up to 5 mm in height, 61 of which were isolated viral warts (common and palmo-plantar warts in 32 cases) and 153 multiple viral warts (common and plane warts in 4 cases). Among the 32 cases with isolated warts there was a recurrence in only one within 4 months after treatment, while in 2 of the 4 cases with multiple warts recurrence of the majority of the warts treated was observed a few weeks after the apparent cure.

The usual number of applications per tumor, for all the warts treated, varied between 1 and 3 sessions (max. 7). The treatment was generally well tolerated. 2 patients complained of pain at the time of the application. In 2 cases of common warts (2 warts) on the tip of the nose a cupulate scar was observed after 4 months, probably because of too strong an impregnation of the product. In 1 single case an abscess formed after the application, and subsided spontaneously within a few days, without leaving a scar.

There was no statistically significant difference between the average number of applications needed to treat the naevocytic naevi and the isolated common warts. On the other hand, the average number of applications needed to treat the 22 palmo-plantar warts was significantly higher ($p < 0.01$) than that required to treat the 39 common warts (Student's t test).

Discussion

Naevi

The efficacy of the new product in the chemotherapeutic treatment of naevocytic naevi in this study is comparable to that observed by *Labhardt* [4]. With one or two applications per tumor, all 33 naevocytic naevi were 'eradicated'. In 3 cases (3 tumors) there were cupulate scars which were aesthetically acceptable and tended to flatten after a few months. They may have resulted from the spread of the product beyond the edge of the tumor itself with connective tissue destruction by overdosage of the acid mixture, or because voluminous skin tumors (over 10 mm in diameter) present a risk of scarring when loss of substance cannot be spontaneously replaced after destruc-

tion of the tumor. Thus this new agent should be applied only by medically qualified persons and handled with care in the treatment of naevi.

Viral Warts

We generally obtained complete cures of common and palmo-plantar warts with 1–3 applications per tumor. However, a distinction has to be made between isolated and multiple common warts, because of the marked tendency to recurrence observed in the latter. There were multiple recurrences in 2 of the 3 cases with multiple common warts, even though the majority of treated warts had apparently been 'cured'. Unfortunately, the 2 patients did not agree to further treatments. In contrast, out of 19 cases with isolated common warts, there was only 1 recurrence.

There are two principal explanations for the 3 recurrences observed in our 36 cases (8.3%):

(1) Selective immune deficiency is frequently found in patients with multiple warts, and is all the more probable if the condition affects several siblings, as in our 2 relapsing cases. It is now known that a lowering of the cellular or humoral immunity can lead to more sensitivity to human papilloma virus (HPV) infection and that warts are more resistant to treatment in these cases [1].

(2) Incomplete treatment of the warts. The larger the number of lesions, the greater the risk of an incomplete or inadequate treatment. More virulent types of HPV might contaminate adjacent healthy cells so as to escape from the host defence system or the mummifying action of the chemical. For example, typical spreading warts such as plantar mosaic warts are known to be frequently resistant to therapy [2].

We therefore consider it important to warn the patient of the risk of recurrences and to carry out regular check-ups because of the possible resistance of this type of wart to the new treatment.

Conclusion

According to our results obtained with the technique described above, Solcoderm seems to be an effective, innocuous and easy to use product for eradication of certain small skin tumors with the possibility of histological confirmatory diagnosis on the treated tumor. It can be applied to several sites at the same time, and promises to be a treatment of choice for unaesthetic or troublesome naevocytic naevi, as well as for common and palmo-plantar warts. However, classical surgical excision-biopsy is imperative if there is any doubt as regards the malignant or benign nature of the pigmented naevus.

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