

VACCINE THERAPY OF WARTS IN CHILDREN*

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Warts (verrucae) are intra-epidermal tumors caused by deoxyribonucleic acid (DNA) viruses of the papova group; those which infect humans are not readily transmissible by animals¹⁻³. Warts can affect the skin and mucous membranes including the larynx (laryngeal papillomas). Warts are inoculable from one location to another and from one person to another through direct or indirect contact¹⁻³.

Warts are seen in seven to ten percent of the population and they are among the most common skin disorders of childhood⁴. Although rarely a serious health problem, warts are often responsible for cosmetic problems in those who have them. There is no single effective treatment of warts and their course is unpredictable. Over 50% of all warts disappear spontaneously within two years; they are occasionally resistant to therapy and there is a recurrence rate that varies from five to ten percent no matter what the therapeutic approach⁵. In addition, there are some serious side effects associated with some of the therapies used. The vaccine therapy of warts has no such serious side effects⁶, which is why, though it is an old method, we wanted to study the value of wart vaccines in the therapy of children with warts.

Material and Methods

The vaccine treatment was used on eleven children with verrucae vulgares on their hands. All the patients were between the ages of 10 and 15. Six of them were boys. Eight of them had multiple warts. In the control group consisting of eleven children in the same age group, saline solution injections were given in the same manner as the vaccine treatment described below.

The wart vaccines were prepared in the way described by Biberstein⁶. A small piece of wart was removed by cutting with a flat burner under local anesthesia. The material was cut into small pieces and ground in a mortar with two or three

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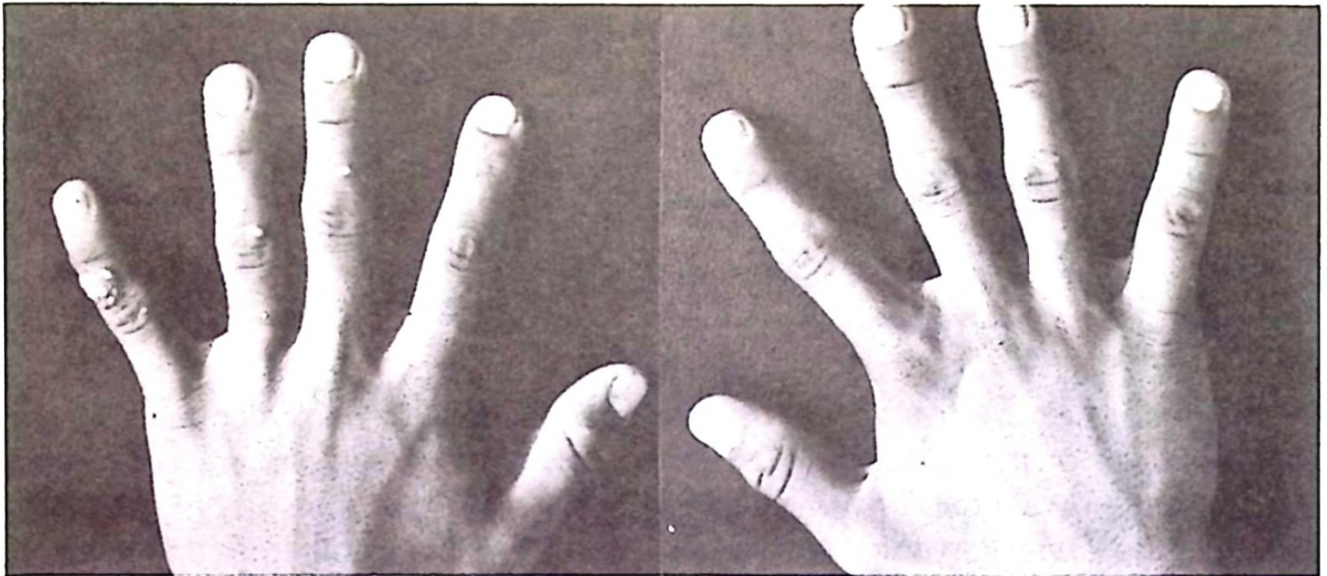


Figure 1 – a

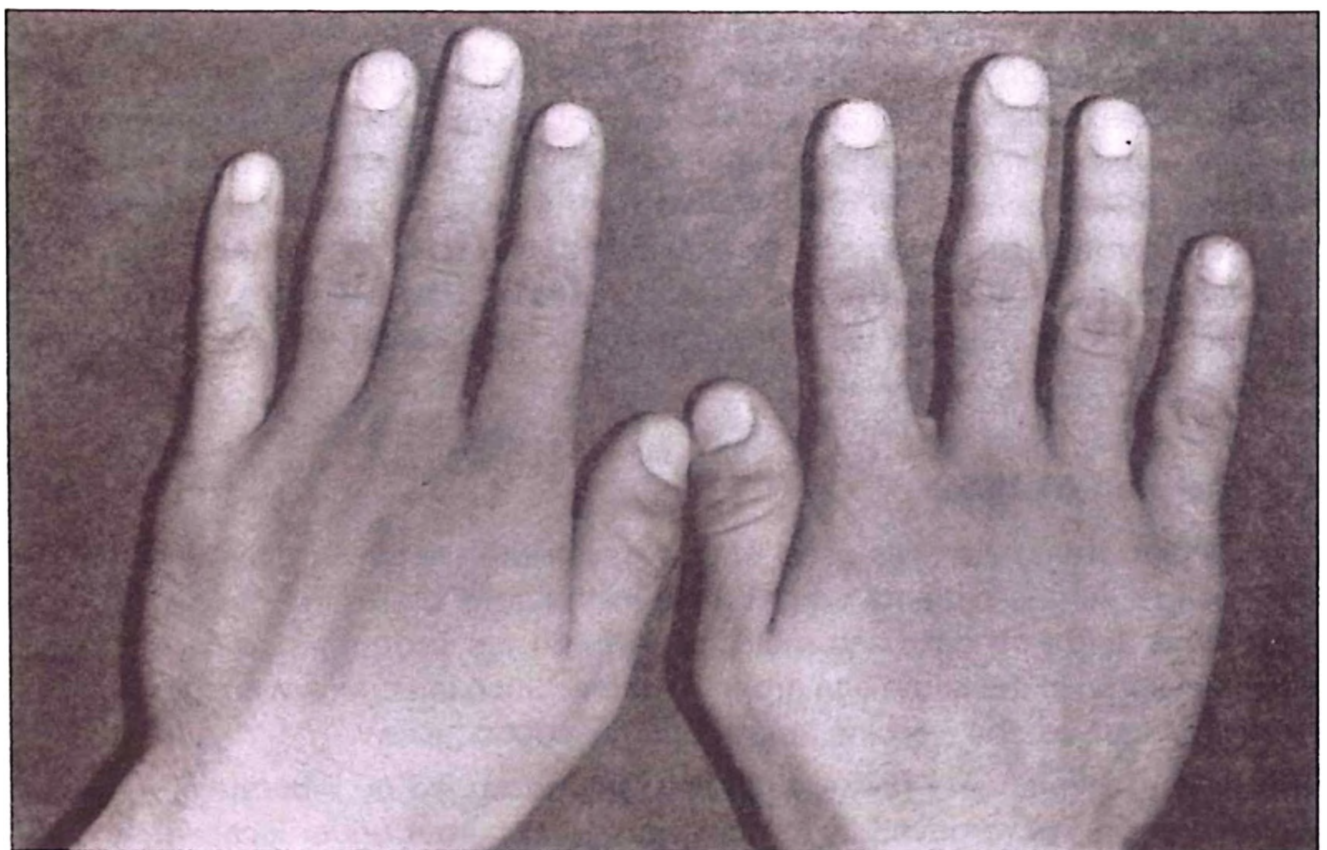


Figure 1 – b

Figure 1

The appearance of warts on the hands of a ten-year-old boy, (a) before and (b) after the vaccine therapy. All the injections were made around the biggest wart on the left little finger.

parts of isotonic solution of sodium chloride until it reached a pulpy consistency. This was kept at room temperature for twenty-four hours and shaken intermittently. Then it was sterilized for two hours in a water bath at a temperature of 56 to 60 °C, after which it was filtered through a sterile gauze in order to remove particles which would not pass the needle and phenolized to give a phenol content of 0.5%.

The vaccines were administered to patients in the form of two 0.1 cc injections administered intracutaneously each week. All the injections were made in the apparently healthy skin around the wart (or around the biggest one in patients who had more than one wart).

Results

Nine of the patients were influenced favorably (Figures 1 and 2). On an average ten injections were necessary for a satisfactory result. Of the nine patients successfully treated the first sign of a response to the treatment became manifest after five injections. In all the patients itching and redness around the warts were seen as the first sign of the reaction. After that all the warts slowly resolved in approximately ten days without any scarring (Figure 2). All these reactions were observed not only at the injection sites but in the warts on the other parts of the body such as on the other hand.

There was no reaction around the wart(s) or regression of the wart(s) in the control group who received approximately fifteen injections of isotonic sodium chloride.

Discussion

A variety of therapeutic measures are effective in the treatment of warts. The choice of therapy depends upon the age and disposition of the patient and upon the number, size and localizations of the lesions. To be effective, any treatment must remove the entire wart and eradicate all virus; otherwise recurrences are common⁷. Warts can be destroyed by the topical application of cantharidin (a potent blistering agent, it is the purified active ingredient of cantharides, the dried, powdered blister beetle or Spanish fly)⁸, formaldehyde⁹, trichloroacetic acid⁸, podophyllum resin¹⁰, or keratolytic preparations (lactic acid, salicylic acid)¹¹, or by cryosurgery¹¹, X-ray¹², electrodesiccation and curettage^{1,2}, and local bleomycin injection^{13,14}.

Warts are epidermal lesions and usually do not produce scarring unless they are surgically managed or treated in an overtly aggressive fashion^{1,2}. The keratolytic agents may cause irritation in the normal skin around the warts⁷. Occasionally a ring of satellite warts may develop at the periphery of the blister during therapy



Figure 2 – a

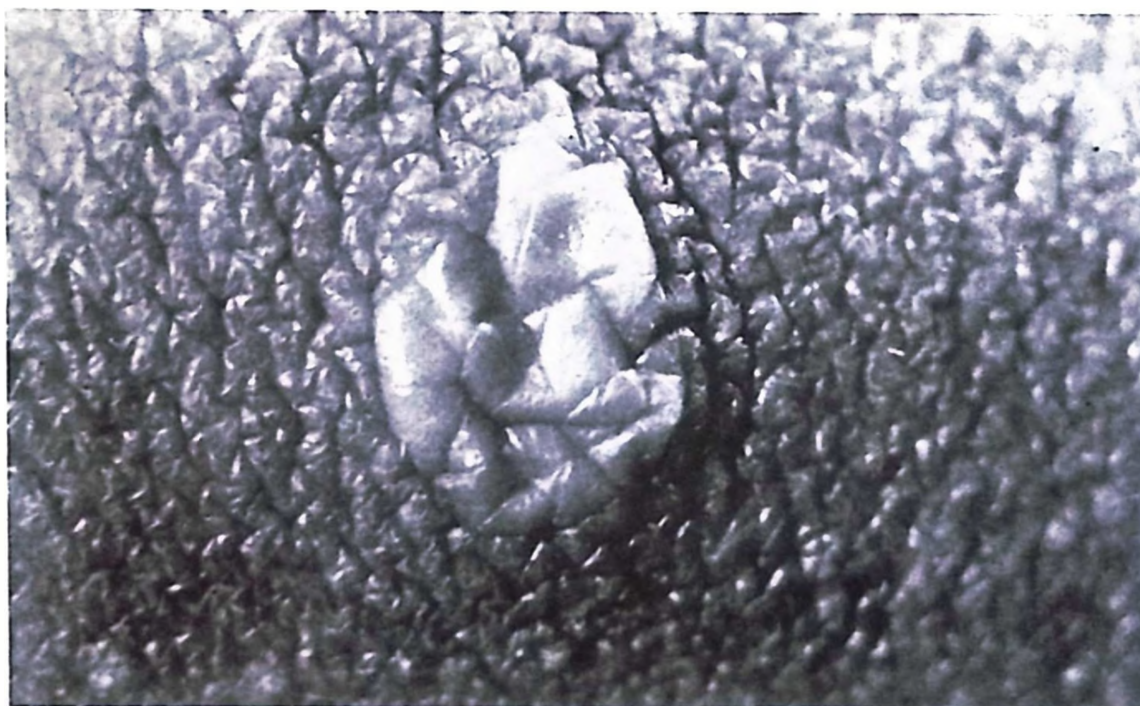


Figure 2 – b

Figure 2

**High magnification of a wart, (a) before and (b) after the vaccine therapy.
There is almost no sequela.**

with cantharidin⁸. Podophyllum resin derivatives may cause some toxic hematologic effects (leukopenia and thrombocytopenia) when used in large quantities on mucous membranes¹⁰. Neuropathy has been reported as the result of cryosurgery over superficial nerves¹¹. Local X-ray therapy is not recommended for use in children because of the possibility of injury to underlying epiphyseal centers¹ and surgical procedures may lead to scarring that can be more painful and ugly than the wart itself¹.

The fact that there is often a simultaneous disappearance of warts on different parts of the body and that a local inflammatory reaction often precedes their disappearance, strongly suggests an immunological mechanism as the cause of warts, and so it was suggested that a vaccine could be used in their therapy⁶. Biberstein has treated several hundred patients with the vaccine described above⁶. Three out of every four patients who were given more than ten injections were cured almost completely. Some of the patients who did not respond to the vaccine therapy prepared from their own warts, responded to a vaccine made from the warts of another resistant patient. In his review article, Biberstein records that of ten other workers who used the wart vaccine, eight reported favorable results.

Although the effectiveness of the wart vaccines has been proved their effectiveness may not be due to the development of a specific immunity to the human papova virus, for it has been shown that vaccines prepared from bovine warts, milk or even isotonic sodium chloride have been almost equally effective³. There is no report concerning double-blind clinical trials of wart vaccines so it is impossible to assess the value of vaccine therapy properly.

One of the striking features of warts is that spontaneous regression sometimes occurs without any treatment and for no apparent reason. In some cases, when one wart is under treatment, warts on the other parts of the body regress without treatment¹². Although their course is totally unpredictable the range of duration of lesions varies from a few months to five years or more, with 25% - 30% disappearing spontaneously within a period of three to six months and 65% disappearing spontaneously within a period of two years^{4,15}.

Warts can be cured by psychotherapy or hypnosis without any physical or chemical treatment¹⁶⁻¹⁸. The power of suggestion is simple, nontraumatic, and in susceptible individuals (usually young children five to ten years of age) may cure warts within a few days, leaving no trace of the previous lesion. How this works is unknown; however, it may explain the multiple spontaneous cures attributed to various inert preparations such as willow leaf in vinegar, alum, etc¹⁹. Most of the innumerable folk remedies for warts depend upon the tendency of warts to resolve spontaneously and possibly to the influence of suggestion²⁰. It is very difficult to compare the results of psychotherapy with the other methods, since,

during therapy with known methods other than psychotherapy, patients are to some extent under a psychological influence if only that of the value of the drugs used. Further, it is common knowledge that many skin diseases are influenced by the psychological state of the patient²¹⁻²³.

The question is whether the results obtained by vaccine therapy are completely due to psychotherapy or spontaneous regression or are in part due to some nonspecific physical or chemical stimulation of tissue resistance. The mechanism of wart vaccine is also suspected. Complement-fixing antibodies have been shown in some patients with warts²⁴. But there is no correlation between the serological results and the length of time the wart had been there. In addition, approximately half of the patients had no demonstrable antibody to human papova virus²⁵. The presence of a new tumor antigen in human warts has not yet been demonstrated, but if such an antigen were present the level of antibodies to it could well show a better correlation with the clinical condition than the level of antiviral antibodies. Skin hypersensitivity to wart tissue extracts was also shown in some patients^{3,26}. The incidence of antibodies in the general population and after vaccine treatment remains to be studied.

Vaccine therapy could be used in some special indications as follows⁶ : when there is an excessive number of warts, when the warts are in locations in which other methods of treatment are impracticable or inadvisable, when the warts prove resistant to other methods of treatment which at first seemed more convenient or more advisable, when there are recurrences following other treatments and when there are wart-related or possibly related diseases present (condylomata acuminata, papillomatosis laryngis, papillomatosis vesicae urinariae, papillomatosis vesicae felleae).

The use of the smallpox vaccination has also been suggested for the treatment of warts. Although direct inoculation of the smallpox vaccine into the warts may provide a remission rate in 30% to 60% of cases, the risk of permanent scar at the site of treatment and possible pain or severe systemic reactions or both, make this method unsound. The smallpox vaccination is thus not a recommended form of therapy in the management of warts²⁷.

Successful treatment of resistant warts has been reported following the topical application of 2,4 dinitrochlorobenzene (DNCB) directly onto the warts in patients previously sensitized to the agent²⁸. It is believed that a delayed hypersensitivity reaction is responsible for the disappearance of the warts, although the percentage of patients with demonstrable complement-binding wart virus antibodies also increases following treatment^{29,30}.

Summary

The value of immunization therapy in the treatment of warts is investigated. Nine out of eleven children between the ages of 10 and 15 were cured or influenced by immunotherapy. All the vaccines were prepared according to the method described by Biberstein in which the patient's own warts are used for the antigenic stimulant.

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