Warts: another look at a nuisance

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Warts are one of the most common skin lesions. They rarely cause serious health problems, but may cause cosmetic problems that are very disturbing to those who have them. While some warts resist drastic measures of cutting, burning, and caustics, others melt away in a few days after being charmed by a local mystic.

Warts may occur at any age, but their peak incidence is in 10- to 14-year-olds, from 10% to 40% of whom develop warts. Persons who are receiving topical or systemic corticosteroids or who are immunosuppressed by cytotoxic agents or by genetic defects are more prone to develop warts. Increased incidence has also been reported in patients with Wiscott-Aldrich syndrome and in some types of dysgammaglobulinemia. Acuminate warts may occur or grow rapidly during pregnancy, possibly because of an increased blood flow in the anogenital area. Hyperhidrosis is often associated with multiple warts of the arms and legs, and may account for the high recurrence rate of warts in the genital and perianal areas.

With the rare exception of epidermodysplasia verruciformis, warts have not been associated with malignant transformation.

The virus that causes warts is a member of the DNA-containing papovavirus group. It can be transmitted by direct and indirect contact and by autoinoculation (Figure 1). This explains the common occurrence of warts along the line of a previous scratch, abrasion, or tattoo.

The wart virus infects only epidermal cells, inducing their proliferation in thick folds within which lie elongated papillae. On histologic examination, most warts show a thickening of all layers of the epidermis. Large vacuolated cells appear in and below the granular layer. The nuclei of infected cells are enlarged and filled with material that includes virus particles. Since the wart is purely an epidermal tumor, the basal cell layer remains intact. This ex-

Figure 1—Warts spread by autoinoculation.
sions over the entire beard area. In rare cases, flat warts may become generalized and confluent. In this probably hereditary condition, epidermodysplasia verruciformis, the warts may undergo malignant degeneration.

- **Filiform warts** project from the skin surface with delicate pointed, cornified tips. They usually occur on the face, neck eyelids, or lips. The base is often pale pink.
- **Plantar warts** are both common and troublesome. These lesions are firm, flat, or slightly raised, tan to flesh-colored, and occur on the plantar surface of the feet, usually on weight-bearing areas (Figure 4). Pushed inward by walking, they often become painful and tender. Bilateral occurrence may cause complete incapacitation. Plantar warts may consist of single large warts several centimeters around, or mosaic warts, consisting of scores of smaller contiguous warts. The normal skin ridges do not traverse a wart's surface, and this helps distinguish them clinically from calluses.
- **Condyloma acuminata**, also called moist warts, fig warts, and venereal warts, are fleshy-pink-to-gray growths that often resemble raspberries, cauliflower, or cockscombs. They occur in moist flexural sites, especially the anogenital area (Figures 5 and 6).
- **Periungual** warts are a frequent complication of nail biting. The wart is the most com-

What warts look like

Warts can occur in a variety of forms on any part of the skin or mucous membrane.

- **Common warts** occur most often on the fingers, hands, and knees (Figure 2, A and B). They are raised, rough-textured, circumscribed, and usually painless, though dry cornified areas may fissure and bleed. They vary from pinhead size to several centimeters in diameter. New lesions are flesh-colored, while older lesions acquire a yellowish tan color and become increasingly rough-surfaced. Satellite lesions commonly grow around a "mother" wart, especially after the patient has manipulated it or attempted some form of traumatic therapy.

- **Flat warts** are flesh-colored to tan, and occur most commonly on the face, chest, neck, and hands (Figure 3). Close shaving with a razor can spread the lesions.

Figure 2A

Figure 2B

Figure 3—Flat warts on the face during treatment with topical acid.

Figure 4—Plantar warts during treatment with salicylic acid plaster.

Figure 5—Penile warts.

Figure 6—Perianal warts.
common tumor to develop near the nail. It may affect several fingers and, less frequently, the toes. It may penetrate like a plantar wart if it grows below the nail plate (Figure 7). Bone destruction of a distal phalanx has been described. More commonly, the wart involves the lateral and proximal nail folds. The nail matrix rarely becomes involved, and so the nail plate usually remains unchanged.

**Diagnosis** is simple
You can usually distinguish warts from moles by their hardness, lack of true pigmentation, and development after infancy. Flat warts must be distinguished from lesions of lichen planus, which are more red, polygonal, and have small white lines on their surface, and from keratosis follicularis.

Filiform warts may be confused with cutaneous horns or skin tags. Both plantar warts and plantar corns may be tender and hyperkeratotic, but paring of a corn reveals an underlying dry, hard kernel, while plantar warts show black dots or bleeding points. Condyloma acuminata may be mistaken for condyloma lata of secondary syphilis, melanomas, or nevi (Figure 8).

**Treatment:** first do no harm
Before attempting to remove a wart, remember that the spontaneous disappearance of warts never leaves a scar, while some surgical procedures can lead to scarring that can be more painful and ugly than the wart itself.

To be effective, any treatment must completely eradicate all virus, since anything less may result in recurrences (Figure 9, A, B, and C). Topical agents include salicylic acid (often in a 40% plaster that effectively reduces the wart's hyperkeratotic surfaces) (Figure 10, A, B, and C); formaldehyde; trichloroacetic acid; phenol followed by concentrated nitric acid; cantharidin; and podophyllin (often used in 20% tincture of benzoin for moist venereal warts). Flat warts of the beard area may be treated with topical vitamin A acid or dilute trichloroacetic acid.

I prefer cryosurgery with liquid nitrogen for most warts treated in the office. Although the -196°C temperature does not in itself destroy the wart, the cold induces blister formation just above the dermo-epidermal junction. This removes the cells infected with the virus, while the basement membrane is left in-
tact. Thus, the purely epidermal wart is removed and falls off as the regenerating epidermis crawls in from the sides of the blister. Little or no scarring occurs and local anesthesia is not required (Figure 11, A, B, and C). Cryosurgery also effectively eradicates refractory penile and vulvar warts.

Other surgical methods include blunt dissection and curettage and electrodesiccation. The curette is a razor-sharp spoon used to scoop out the entire wart. The edges are carefully scraped with a clean curette to prevent reseeding of the viral particles. Electrodesiccation shrivels the cells in contact with the needle, but curettage and further electrodesiccation may be necessary. Healing takes place with crust formation and scarring, which usually improves with time.

Warts may also be removed by simple excision, but recurrences are common. Simple excision of a plantar wart may result in a painful scar that is far more debilitating than the original wart. X-ray therapy is an effective method of treatment for recalcitrant warts, particularly plantar warts, but post-irradiation ulcers may occur.

Whatever method you use, instruct the patient to return promptly if new warts appear, and point out that the incubation period before recurrence may be as long as a year. And remember to treat the warts of all persons living together and having warts at the same time, so that they will not continue to transmit warts back and forth among themselves.

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