Many other types of panniculitis have also been described, a few of which merit brief mention.

- *Weber-Christian disease (relapsing febrile nodular panniculitis)* is a rare form of lobular, nonvasculitic panniculitis seen in children and adults. It is marked by crops of erythematous plaques or nodules, predominantly on the lower extremities, created by deep-seated foci of inflammation containing aggregates of foamy macrophages admixed with lymphocytes, neutrophils, and giant cells.
- *Factitial panniculitis* is a form of secondary panniculitis caused by self-inflicted trauma or injection of foreign or toxic substances.
- Rare types of *T-cell lymphoma* home to fat lobules, producing fat necrosis and superimposed inflammation that mimics panniculitis.
- *Lupus erythematosus* may occasionally cause inflammation of the subcutis and an associated panniculitis.

Infection

The skin frequently succumbs to the attack of microorganisms, parasites, and insects. We have already discussed the possible role of bacteria in the pathogenesis of common acne, and the dermatoses resulting from viruses are too numerous to list. In the setting of the immunocompromised individual, ordinarily trivial cutaneous infections may become life threatening. Many disorders, such as herpes simplex and herpes zoster, the viral exanthems, deep fungal infections, and immune reactions in skin provoked by infectious agents, are discussed in Chapter 8. Here we cover a representative sampling of common infections whose primary clinical manifestations are in the skin.

Verrucae (Warts)

Verrucae are squamoproliferative disorders caused by human papillomaviruses. They are common lesions of children and adolescents, although they may be encountered at any age. Transmission of disease usually involves direct contact between individuals or autoinoculation. Verrucae are generally self-limited, regressing spontaneously within 6 months to 2 years.

Pathogenesis. More than 150 types of papillomavirus have been identified, many of them capable of producing warts in humans. The clinical variants of warts are often associated with distinct HPV subtypes. For example, anogenital warts are caused predominantly by HPV types 6 and 11. HPV type 16 has been associated with in situ squamous cell carcinoma of the genitalia and with *bowenoid papulosis* (genital lesions of young adults with the histologic appearance of carcinoma in situ, but which usually regress spontaneously; see also Chapter 21). The relationship of HPV subtypes 5 and 8 to squamous cell carcinomas, particularly in individuals affected by the rare condition epidermodysplasia verruciformis, was mentioned earlier. These patients develop multiple flat warts that contain HPV genomes, some of which progress to carcinoma. Viral typing can be accomplished by either in situ hybridization (Fig. 25-38*D*) or polymerase chain reaction.

You will recall that HPVs that are associated with a high risk of cancer produce E6 proteins that abolish p53 function (Chapter 7). By contrast, HPV subtypes 5 and 8 produce variant E6 proteins that do not affect p53, probably explaining why these forms of HPV have low oncogenic potential. Some recent studies suggest that the E6 proteins of low-risk HPVs interfere with Notch signaling, which is known to be required for the normal maturation of keratinocytes, and this effect may contribute to the epidermal hyperplasia that characterizes warts.

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The classification of verrucae is based largely on appearance and location. **Verruca vulgaris** is the most common type of wart. The lesions of verruca vulgaris occur anywhere but most frequently on the hands, particularly on the dorsal surfaces and periungual areas, where they appear as gray-white to tan, flat to convex, 0.1- to 1-cm papules with a rough, pebble-like surface (Fig. 25-38*A*). **Verruca plana**, or **flat wart**, is common on the face or the dorsal surfaces of the hands. The warts are slightly elevated, flat, smooth, tan papules that are generally smaller than verruca vulgaris. **Verruca plantaris** and **verruca palmaris** occur on the soles and palms, respectively. Rough, scaly lesions may reach 1 to 2 cm in diameter, coalesce, and be confused with ordinary calluses. **Condyloma acuminatum (venereal wart)** occurs on the penis, female genitalia, urethra, perianal areas, and rectum. Venereal warts appear as soft, tan, cauliflower-like masses that occasionally reach many centimeters in diameter.

Histologic features common to verrucae include epidermal hyperplasia that is often undulant in character, termed **verrucous or papillomatous epidermal hyperplasia** (Fig. 25-38*B*); and cytoplasmic vacuolization (koilocytosis) involving the more superficial epidermal layers, producing haloes of pallor surrounding infected nuclei. Electron microscopy of these zones reveals numerous HPV virions within nuclei. Infected cells may also demonstrate prominent and apparently condensed keratohyaline granules and jagged eosinophilic intracytoplasmic keratin aggregates as a result of viral cytopathic effects (Fig. 25-38*C*). These cellular alterations are not as prominent in condylomas; hence, their diagnosis is based primarily on hyperplastic papillary architecture containing wedge-shaped zones of koilocytosis.

Molluscum Contagiosum

Molluscum contagiosum is a common, self-limited viral disease of the skin caused by a poxvirus. The virus is characteristically brick shaped, has a dumbbell-shaped DNA core, and measures 300 nm in maximal dimension, and thus represents the largest pathogenic poxvirus in humans and one of the largest viruses in nature. Infection is usually spread by direct contact, particularly among children and young adults.

MORPHOLOGY

Multiple lesions may occur on the skin and mucous membranes, with a predilection for the trunk and anogenital areas. Individual lesions are firm, often pruritic, pink to skin-colored