very common infection in HIV-infected individuals (Chap. 226). The oral cavity is commonly involved. Lesions may occur on the tongue or buccal mucosa (*thrush*) and appear as white plaques. Fissured, macerated lesions at the corners of the mouth (*perléche*) are often seen in individuals with poorly fitting dentures and may also be associated with candidal infection. In addition, candidal infections have an affinity for sites that are chronically wet and macerated, including the skin around nails (onycholysis and paronychia), and in intertriginous areas. Intertriginous lesions are characteristically edematous, erythematous, and scaly, with scattered "satellite pustules." In males, there is often involvement of the penis and scrotum as well as the inner aspect of the thighs. In contrast to dermatophyte infections, candidal infections are frequently painful and accompanied by a marked inflammatory response. Diagnosis of candidal infection is based upon the clinical pattern and demonstration of yeast on KOH preparation or culture.

TREATMENT CANDIDIASIS

Treatment involves removal of any predisposing factors such as antibiotic therapy or chronic wetness and the use of appropriate topical or systemic antifungal agents. Effective topicals include nystatin or azoles (miconazole, clotrimazole, econazole, or ketoconazole). The associated inflammatory response accompanying candidal infection on glabrous skin can be treated with a mild glucocorticoid lotion or cream (2.5% hydrocortisone). Systemic therapy is usually reserved for immunosuppressed patients or individuals with chronic or recurrent disease who fail to respond to appropriate topical therapy. Oral agents approved for the treatment of candidiasis include itraconazole and fluconazole. Oral nystatin is effective only for candidiasis of the gastrointestinal tract. Griseofulvin and terbinafine are not effective.

WARTS

Warts are cutaneous neoplasms caused by papillomaviruses. More than 100 different human papillomaviruses (HPVs) have been described. A typical wart, *verruca vulgaris*, is sessile, dome-shaped, and usually about a centimeter in diameter. Its surface is hyperkeratotic, consisting of many small filamentous projections. The HPV types that cause typical verruca vulgaris also cause typical plantar warts, flat warts (*verruca plana*), and filiform warts. Plantar warts are endophytic and are covered by thick keratin. Paring of the wart will generally reveal a central core of keratinized debris and punctate bleeding points. Filiform warts are most commonly seen on the face, neck, and skinfolds and present as papillomatous lesions on a narrow base. Flat warts are only slightly elevated and have a velvety, nonverrucous surface. They have a propensity for the face, arms, and legs and are often spread by shaving.

Genital warts begin as small papillomas that may grow to form large, fungating lesions. In women, they may involve the labia, perineum, or perianal skin. In addition, the mucosa of the vagina, urethra, and anus can be involved as well as the cervical epithelium. In men, the lesions often occur initially in the coronal sulcus but may be seen on the shaft of the penis, the scrotum, or the perianal skin or in the urethra.

Appreciable evidence has accumulated indicating that HPV plays a role in the development of neoplasia of the uterine cervix and anogenital skin (Chap. 117). HPV types 16 and 18 have been most intensely studied and are the major risk factors for intraepithelial neoplasia and squamous cell carcinoma of the cervix, anus, vulva, and penis. The risk is higher among patients immunosuppressed after solid organ transplantation and among those infected with HIV. Recent evidence also implicates other HPV types. Histologic examination of biopsied samples from affected sites may reveal changes associated with typical warts and/or features typical of intraepidermal carcinoma (Bowen's disease). Squamous cell carcinomas associated with HPV infections have also been observed in extragenital skin (Chap. 105), most commonly in patients immunosuppressed after organ transplantation. Patients on long-term immunosuppression should be monitored for the development of squamous cell carcinoma and other cutaneous malignancies.

TREATMENT WARTS

Treatment of warts, other than anogenital warts, should be tempered by the observation that a majority of warts in normal individuals resolve spontaneously within 1–2 years. There are many modalities available to treat warts, but no single therapy is universally effective. Factors that influence the choice of therapy include the location of the wart, the extent of disease, the age and immunologic status of the patient, and the patient's desire for therapy. Perhaps the most useful and convenient method for treating warts in almost any location is cryotherapy with liquid nitrogen. Equally effective for nongenital warts, but requiring much more patient compliance, is the use of keratolytic agents such as salicylic acid plasters or solutions. For genital warts, in-office application of a podophyllin solution is moderately effective but may be associated with marked local reactions. Prescription preparations of dilute, purified podophyllin are available for home use. Topical imiquimod, a potent inducer of local cytokine release, has been approved for treatment of genital warts. A new topical compound composed of green tea extracts (sinecatechins) is also available. Conventional and laser surgical procedures may be required for recalcitrant warts. Recurrence of warts appears to be common to all these modalities. A highly effective vaccine for selected types of HPV has been approved by the FDA, and its use appears to reduce the incidence of anogenital and cervical carcinoma.

HERPES SIMPLEX

See Chap. 216.

HERPES ZOSTER

See Chap. 217.

ACNE

ACNE VULGARIS

Acne vulgaris is a self-limited disorder primarily of teenagers and young adults, although perhaps 10–20% of adults may continue to experience some form of the disorder. The permissive factor for the expression of the disease in adolescence is the increase in sebum production by sebaceous glands after puberty. Small cysts, called *comedones*, form in hair follicles due to blockage of the follicular orifice by retention of keratinous material and sebum. The activity of bacteria (*Propionibacterium acnes*) within the comedones releases free fatty acids from sebum, causes inflammation within the cyst, and results in rupture of the cyst wall. An inflammatory foreign-body reaction develops as result of extrusion of oily and keratinous debris from the cyst.

The clinical hallmark of acne vulgaris is the comedone, which may be closed (*whitehead*) or open (*blackhead*). Closed comedones appear as 1- to 2-mm pebbly white papules, which are accentuated when the skin is stretched. They are the precursors of inflammatory lesions of acne vulgaris. The contents of closed comedones are not easily expressed. Open comedones, which rarely result in inflammatory acne lesions, have a large dilated follicular orifice and are filled with easily expressible oxidized, darkened, oily debris. Comedones are usually accompanied by inflammatory lesions: papules, pustules, or nodules.

The earliest lesions seen in adolescence are generally mildly inflamed or noninflammatory comedones on the forehead. Subsequently, more typical inflammatory lesions develop on the cheeks, nose, and chin (Fig. 71-7). The most common location for acne is the face, but involvement of the chest and back is common. Most disease remains mild and does not lead to scarring. A small number of patients develop large inflammatory cysts and nodules, which may drain and result in significant scarring. Regardless of the severity, acne may affect a patient's quality of life. With adequate treatment, this effect may be transient. In the case of severe, scarring acne, the effects can be permanent and profound. Early therapeutic intervention in severe acne is essential.

Exogenous and endogenous factors can alter the expression of acne vulgaris. Friction and trauma (from headbands or chin straps of athletic helmets), application of comedogenic topical agents (cosmetics