

# Viral Skin Infections

## Herpes simplex

Infection with herpes simplex virus (a DNA virus) is one of the most prevalent infections of humans worldwide. There are two immunologically distinct viruses: herpes simplex virus type 1 (orofacial type) and herpes simplex virus type 2 (genital type), although there may be overlap between disease manifestations.

HSV infections have two phases: primary infection phase and the secondary recurrent infections phase. *Clinically, the first episode may represent a true primary infection or a recurrence*

Both HSV1 and HSV2 reside latent in the sensory ganglion, after primary infection, undetected by the host immune mechanisms

Spread is by respiratory droplets, direct contact with the active lesion or contact with the virus-containing secretions (saliva or genital secretions). Asymptomatic patients shed the virus 100-1000 times less than the symptomatics with active lesions.

### **Orolabial herpes simplex**

Primary infection: occurs most commonly in children between ages 1-5 years and is usually subclinical. In about 10% of the cases, acute gingivostomatitis and pharyngitis occurs. Although most cases are mild, some are severe. Sore throat and fever may precede the onset of painful vesicles occurring anywhere in the oral cavity or on the face. The vesicles rapidly coalesce and erode with a white-yellow superficial purulent exudate. Tender cervical lymphadenopathy develops and fever subsides in 3-5 days but oral pain and erosions gone in 2 weeks.

Recurrent infection: Recurrences arise in 30-50% of cases. Triggers may be fever, URTIs, UVL exposure, trauma, menstruation, stress, or no evident reason. Recurrent infections appear most frequently on the face near the mouth. They are characterized by smaller size of vesicles, close grouping and the usual absence of constitutional symptoms. Itching and burning precedes the development of the closely grouped vesicles on an inflamed base that usually become purulent and crusted before healing in 7-10 days without scarring.

### **Genital herpes simplex**

Primary infection: Occurs mostly after puberty and is sexually transmitted causing multiple painful genital or perianal blisters that rapidly ulcerate. Transmission is most frequently during periods of asymptomatic shedding. Occasionally, an infant contracts HSV-2 in utero or by direct contact in the birth canal.

Recurrent infection: is fairly common (occurs in 95% of cases) producing clusters of small vesicles resulting in non-indurated ulcers on penis (glans or shaft), labia, vagina, or cervix. Asymptomatic shedding can occur.

Herpes simplex may appear on any skin surface (e.g. buttock and lumbosacral region). Fingertip involvement (herpetic whitlow) occurs most commonly in healthcare professionals.

**Investigations:**

None are usually needed, but Tzank smears (Multinucleated giant cells present in scraping of mucocutaneous erosions), fluorescent antibody test, viral culture, polymerase chain reaction (PCR), or skin biopsy may be needed in doubtful cases.

**Complications:**

- 1 Secondary bacterial infection:
- 2 Eczema herpeticum: patients with atopic dermatitis are particularly susceptible.
- 3 Erythema multiforme: may regularly follow recurrent herpes simplex infections.
- 4 Recurrent dendritic ulcers: leading to corneal scarring.
- 5 Disseminated herpes simplex: resulting in severe illness in newborns, or immunosuppressed patients.
- 6 Herpes encephalitis and meningitis can occur without any cutaneous clue.

**Management:**

The disease is usually self limited and no much interference is required. A cool water compress or surgical spirit dabbing and topical antibacterial cream is sufficient for occasional mild recurrent attacks. More severe and frequent attacks may require the application of acyclovir cream (5 times daily for 5 days) with the first sign of recurrence. Oral acyclovir (200mg 5 times daily for 5 days) is more effective and can be used for widespread or systemic involvement. Famciclovir and valcyclovir require fewer doses per day. Supportive therapy is required when indicated.

## **Herpes Zoster (Shingles)**

Varicella (chickenpox) and herpes zoster (shingles) both are produced by the same virus, the varicella-zoster virus (VZV). Varicella results from contact of a nonimmune person with this virus, whereas herpes zoster occurs in persons who have had previous varicella, either clinical or subclinical. As a rule, herpes zoster is caused by reactivation of a latent infection in either a spinal or a cranial sensory ganglion. On reactivation, the virus spreads from the ganglion along the corresponding sensory nerve or nerves to the skin.

Herpes zoster occurs largely in adults, particularly old age, but it can occur in children (usually with a mild course). Pain, tenderness, paresthesia, generally localized to the dermatome, precedes the eruption by 4-5 days and may be accompanied by fever, headache, and malaise. Regional lymphadenopathy may be present. The pain may simulate pleurisy, MI, renal pain, abdominal disease, or migraine headache. Eruption consists of grouped vesicles on (erythematous and

edematous) inflammatory bases, arranged along the course of a sensory nerve (in an interrupted or a continuous band). Successive crops continue to appear for 7 days. Vesicles either umbonate or rupture before forming a crust, which fall off in 2-3 weeks. Zoster is characteristically unilateral, dermatomal. Thoracic region is affected in 2/3 of cases. It is possible, though very unusual, to have two or three episodes in life time.

**Cranial nerve syndromes:** these are special variants of herpes zoster. *herpes zoster ophthalmicus:* involvement of the ophthalmic division of trigeminal nerve can lead to corneal ulcer and scarring. *Ramsay Hunt syndrome:* when the geniculate ganglia are affected causing unilateral facial nerve palsy accompanied by vesicular rash on the ear or in the mouth with unilateral loss of taste sensation on the anterior 2/3 of the tongue.

### **Complications**

- 1 Secondary bacterial infection of skin lesions is common.
- 2 Postherpetic neuralgia: persistent neurologic pain, after the acute episode is over, is most common in the elderly.
- 3 Meningoencephalitis, visceral involvement (pneumonitis, hepatitis, etc), or cutaneous dissemination may occur in immunosuppressed patients.
- 4 Corneal ulcer and in herpes zoster ophthalmicus.
- 5 Motor nerve weakness is uncommon.

### **Treatment:**

Symptomatic with rest, analgesics and bland applications such as calamin. Secondary bacterial infection should be treated appropriately. Systemic antiviral therapy should be given to all patients if diagnosed in the early stage (within the first 5 days) of the disease. Oral acyclovir (800 mg 5 times daily for 7 days). Famciclovir and valacyclovir are as effective and all are safe drugs. For established postherpetic neuralgia, a trial of systemic carbamazepine, gabapentin, or amitriptyline may be worthwhile. Topical capsaicin cream or regional infiltration with lidocaine may be tried.

### **Viral wart**

Warts are caused by the human papillomavirus which is a DNA virus that infect squamous epithelia causing cell proliferation. To date, more than 150 different types of HPVs have been cloned and characterized, and new types are discovered each year, and these vary in their specificity for different anatomical site. Warts can occur at any age, but are rare in infancy and early childhood. Incidence increase at school age and reach peak in adolescence and early adulthood. Spread is by direct and indirect contact. Impairment of the epithelial barrier function by trauma (including mild abrasions), maceration, or both predispose to inoculation of the virus.

The traditional clinical classification of (HPV) infection is based on appearance and location. Although there is a significant variation in clinical morphology, all represent infection by HPV. Clinical patterns include:

**(1) Common wart (Verruca vulgaris)**

These are circumscribed, firm, elevated papules with papillomatous (“verrucous”) hyperkeratotic surfaces. They occur singly or in groups. Generally, they are associated with little or no tenderness. and occur most commonly on the dorsal aspects of the fingers and hands. Filiform warts, variants of Common wart, show threadlike, keratinous projections arising from horny bases. They are most commonly found on the face and scalp.

**(2) Plantar wart (verruca plantaris):**

This type usually presents by pain. Painful, flattened, thick, deeply embedded tender papules with rough keratotic surface occur on the sole of the foot, usually against pressure points. They may be single or multiple. Usually are covered with a thick callus and when the callus is removed with a scalpel, the wart becomes apparent.

DDx: corn

	<u>Corn</u>	<u>Wart</u>
Site:	over bony prominences	Anywhere on planter surface
Skin lines	normal	disrupted
Pain	On direct pressure only	On lateral pressure also
Paring	Reveals normal skin (stratum corneum)	Reveales warty tissue (punctate hemorrhagic spots from thrombosed capillaries)

**(3) Plane wart (verruca plana):**

are slightly elevated, flat, smooth papules. Usually skin colored but may pigmented. The face and the dorsa of the hands are affected most commonly. No. range from few to 100s. Koebner’s phenomena (i.e occurrence of new lesions at trauma sites) is positive, like in the common wart.

**(4) Anogenital wart (Condylomata acuminata):**

can occur on the penis, on the female genitals, and in the anal region. The skin lesions consist of fairly soft, not hyperkeratitic , verrucous papules that occasionally coalesce into papillomatous often pedunculated cauliflower-like masses with a moist macerated vascular surface. They may coalesce to form huge lesions causing discomfort and irritation. Vaginal and anorectal mucosae may be affected and lesions are flatter on mucosal surfaces. It is transmitted both sexually (mostly) and non sexually.

DDx: condylomata lata: seen in syphilis, lesions are oval, slightly raised, flatter, greyer and less well defined. Look for other signs of secondary syphilis and carry out serological tests.

### **Treatment**

Routine treatment of every wart is unnecessary. Explain that self resolution may occur. Whatever method used, there may be recurrences and failures. So many modalities are available and all depend on destruction of the tissue infected with the virus.

#### Topical applications:

*Keratolytics* (salicylic acid and lactic acid) for common and plantar warts. *Caustics* (TCA) may also be used. Topical retinoic acid application for 2-3 weeks may clear plane warts. *Podophyllin* paint is used for anogenital warts. *Imiquimod* cream is also effective.

#### Surgical methods:

*Cryosurgery*: light cryosurgery with liquid nitrogen freezing the wart is quite effective but painful. *Electrosurgery*: More effective than cryosurgery, but also associated with a greater chance of scarring. Local anesthesia is required. *Surgery*: by curettage. Surgical excision of cutaneous HPV infections is not indicated in that these lesions are epidermal infections. *Laser Surgery*: Effective for recalcitrant warts.

## **Molluscum contagiosum**

Common (contagious) disease caused by DNA pox virus (molluscum contagiosum virus (MCV)) afflicts both children and adults. The incubation period is 2-6 weeks and spread occurs by direct contact (including sexual transmission) or indirectly by contaminated fomites. Lesions present as shiny, pearly white, dome shaped, sessile papules with a smooth surface and characteristic central umbilication. A white cheesy material may be expressed from the central punctum on squeezing the lesion. Spontaneous involution may occur, during which, there may be mild inflammation and tenderness. Same treatment outlines as common warts are applied. Lesions can be squeezed with forceps expressing cheesy material.

## **Orf (ecthyma contagiosum)**

Parapox virus infection spread from sheep or goats to contact persons. The infected animals have a stomatitis, with crusted lesions on the lips and in the mouth. After an incubation period of 3 to 7 days, patient develop one to three (rarely more) painful firm, dome-shaped nodules, several centimeters in diameter with an erythematous periphery, usually on the hands or occasionally elsewhere as a result of autoinoculation. They may trigger erythema multiforme or lymphangitis. Heal without scarring over weeks. No active treatment is required, but topical antibiotic to prevent secondary bacterial infection

## **Hand, Foot, and Mouth disease**

As the name suggests, is an infection causing lesions on the hands/feet and in the mouth. Commonly associated with Coxsackievirus A and can affect children and adults. The virus is highly contagious with a short incubation period of 3–6 days. Young children in particular present with fever, headache and malaise alongside the rash. The characteristic rash consists of erythema surrounding yellow-grey vesicles on palms/soles and lips. Rarely, a more generalized eruption develops.

The condition lasts up to a week. No specific treatment.