Human Herpes Viruses

- HHV-1: Human Simplex Virus-1 (HSV-1)
- HHV-2: Human Simplex Virus-2 (HSV-2)
- HHV-3: Varicella-Zoster Virus (VZV)
- HHV-4: Epstein-Barr Virus (EBV)
- HHV-5: Cytomegalovirus (CMV)
- HHV-6: Roseolovirus
- HHV-7: Similar to HHV-6
- HHV-8: Kaposi sarcoma, lymphomas, Castleman’s dz

Human Herpes Viruses

- Only in humans
- Reside for life
- Periods of latency and reactivation
- Endemic worldwide
- HSV-1,2 and VZV: neurotropic; replicate in epithelial cells
- EBV, CMV, HHV-6: lymphotropic
- HHV-6: Secreted in saliva of ~all children and in lymphoproliferative diseases of adults
- HHV-8: Identified in Kaposi sarcoma

Herpes Simplex Virus

- HSV-1 (above the waist) and 2 (genital area)
- Single-stranded DNA
- Lytic to epithelial cells; latent in nerves
- Epithelial cell death releases virions; very short life
- Can enter through areas of trauma; there is evidence that it can penetrate intact mucosa

Primary Infection

- Young age
- Low socioeconomic societies ~100% by age 30
- Higher socioeconomic societies 50-60% in adults
- Young: gingivostomatitis
- Adults: pharyngotonsillitis
- Often asymptomatic, no significant morbidity
- Transportation to the sensory ganglion (rarely autonomic)

Primary Infection

- Acute herpetic gingivostomatitis
- 12% of infected patients had recalled clinical symptoms
- 2-3 years; as old as 60 years
- Anterior cervical lymphadenopathy
- Chills and fever (104°F)
- Numerous vesicles that collapse and form small red lesions; ulcerations covered with fibrin
- Both masticatory and non-masticatory mucosa
- Edematous gingiva
- Self inoculation to other areas can occur
- Resolution: 5-15 days
Secondary Infection

- Reactivation triggered by: emotional stress, trauma, cold, sunlight, gastric upset, fever, menstrual cycle, other factors suppressing the immune system
- Incubation: 1-26 days (3-9 days)
- Altered sensation: fullness, lack of tactile sensation and sensory perception
- Vesicle formation; highly contagious
- Shedding of virus can occur without clinical disease

Secondary Infection

- Herpes labialis
- Recurrent intraoral herpes
- Prodromal symptoms and signs
  - Pain, burning, itching, tingling
  - Small vesicles
Other Clinical Presentations

- Herpetic whitlow
- Herpes gladiatorum (scrumbox)
- Areas of chronic skin disease (pemphigus, eczema)
- Immunocompromised patients
- So-called geometric glossitis
Histologic Findings

- Acantholysis (Tzanck cells)
- Ballooning degeneration
- Multinucleated epithelial cells

Treatment

- Primary
  - Symptomatically
  - Acyclovir
  - Avoid lidocaine and aspirin in pediatric patients
- Recurrent lesions
  - Acyclovir (valacyclovir, famciclovir)
61 yo white female

- Low grade fever
- Malaise
- Slight cervical lymphadenopathy
- Oral “blisters” and ulcerations
Varicella Zoster Virus

- **Varicella** (chickenpox)
  - Generalized maculopapular skin rash, fever, malaise, mouth lesions
  - Rash → Vesicles & Pustules → Crust
  - Contagious until crusts form
  - Mouth; vesicular lesions
  - Adults: Complications that may lead to death
  - Infection during pregnancy may cause abortion and birth defects

Varicella Zoster Virus

- Vs. Smallpox
  - The lesions in smallpox are at the same stage of development throughout the body, densely concentrated in the face and extremities and deep.
  - Palms and soles are virtually never affected
Varicella Zoster Virus

- Treatment
  - Warm soap baths and oral diphenhydramine
  - Antiviral medication
  - Vaccination: 95% immunity after 7 years

Herpes Zoster

- Latency in dorsal spinal ganglia
- 10-20% of individuals
- Neuralgia that precedes rash; fever; headache
- Affects dermatome
- Vesicles develop (may be absent: zoster sine herpete)
- Vesicles, pustules, crusts
- Oral lesions: Lesions extend to the midline
- Ocular lesions can lead to blindness

Varicella Zoster Virus

- Herpes Zoster
  - Postherpetic neuralgia
  - Light stroking of the area
  - Contact with clothes
  - Capsaicin
  - Antivirals
  - Corticosteroids for chronic pain

Ramsay Hunt syndrome

- Cutaneous lesions
- External auditory canal lesions
- Facial paralysis
- Hearing deficit
- Vertigo
Epstein Barr Virus

- Infectious mononucleosis
  - Affects B cells
  - Heterophile antibody is a byproduct of B cells that binds the Paul-Bunnell antigen of sheep and bovine RBCs.
  - B cell involvement activates T cells
  - "Kissing disease"
  - Asymptomatic in children
  - Lymphadenopathy, fatigue, fever, hepatomegaly, splenomegaly
  - 4-6 weeks; lymphadenopathy and fatigue can persist for months
  - Palatal petechiae

Epstein Barr Virus

- Infectious mononucleosis
  - Symptomatic treatment
  - Avoid aspirin, sports (splenic rupture), corticosteroids except in life-threatening situations
**Epstein Barr Virus**

- Hairy leukoplakia
  - HIV(+)
  - HIV(-) immunosuppressed patients
  - HIV(-) immunocompetent patients who use steroids
  - Healthy individuals (?)

**Epstein Barr Virus**

- Nasopharyngeal carcinoma
  - Southeast Asia
- Gastric carcinomas
- Smooth muscle tumors
- Lymphoproliferative disorders
  - Atypical lymphoproliferative disorder
  - Lymphomas (Burkitt's lymphoma, African type)

**Cytomegalovirus**

- Early childhood
- Contraction during fetal development can lead to stillbirth
- Saliva, through blood-to-blood, intimate contact, transplants
- HIV/AIDS: Ulcerative lesions; associated with HSV; gancyclovir
Coxsackie Viruses

- RNA viruses
- Enterovirus family
- Two types: A(1-23) & B (1-6)
- Herpangina
- Hand-foot-mouth disease
- Acute lymphonodular pharyngitis

Herpangina

- Most cases mild and subclinical
- Cough, rhinorrhea, anorexia, diarrhea, myalgia, headache
- Red macules that lead to vesicles that break
- Look like minor aphthae
- Soft palate, tonsils
- Self-limiting
Hand-Foot and Mouth Disease
- Flu-like symptoms
- Oral and hand lesions always present
- Palms, soles, fingers
- Macules that become vesicles that ulcerate
- Mostly self-limiting disease

Acute lymphonodular pharyngitis
- Controversial condition
- Sore throat
- A few yellow to dark pink nodules on soft palate and tonsils
- No vesicles

Human Papilloma Virus
- Papova virus family
- DNA, double-stranded
- ~ 100 subtypes
- 24 types with lesions of the head and neck
- Tropism for epithelial cells
- Hyperplastic, dysplastic, and neoplastic lesions

Squamous Papilloma
- HPV 6 and 11
- Most common benign neoplasm
- Soft palate, faucial pillars, uvula
- Pedunculated, exophytic, numerous finger-like projections (pointed or blunted)
- White, red, normal oral mucosa color
- Papillomatosis
- Laryngeal papillomatosis
Squamous Papilloma

- Histopathologic characteristics
  - Epithelial hyperplasia
  - Koilocytosis
  - Rich vasculature
  - Mild to moderate inflammation
- Treatment
  - Excision and histopathologic evaluation
Verruca Vulgaris

- HPV 2, 4, 6 and 40
- Perioral areas, infrequent inside the mouth
- Vermillion, tongue
- Nodule with papillary projections or rough surface
- Cutaneous horn

Treatment
- Liquid nitrogen cryotherapy
- Excision
- Keratolytic agents
Condyloma Acuminatum

- HPV 2, 6, 11, 53, 54 & 16, 18 (high risk)
- Sexually Transmitted Disease
- If found in children it can be an indicator of sexual abuse
- Oral and anogenital lesions concurrently
- Lips, soft palate, lingual frenum
- Cluster lesions
- Treatment
  - Excision

Focal Epithelial Hyperplasia (Heck’s disease)

- HPV 13 and 32
- Children; immunocompromised patients
- Some populations show high prevalence
- Multiple lesions spread on lips, tongue, gingiva, tonsils
- Papules; pale or white; clustering
- Treatment
  - Spontaneous regression
  - Conservative excision