Herpes Simplex Virus (HSV)

Herpes simplex virus (HSV) is a viral disease from the herpesviridae family. This family of viruses is enveloped and has double stranded linear DNA. There are two types of Herpes simplex virus. Type 1 HSV causes oral herpes, commonly called cold sores. Other manifestations include herpetic gingivostomatitis, keratoconjunctivitis, and temporal lobe encephalitis. After the patient begins to produce antibodies, HSV type 1 becomes latent in the trigeminal ganglia and can become reactivated with certain stimuli including stress and UV light exposure. Type 2 HSV is primarily a sexually transmitted infection that can cause clusters of inflamed vesicles on the outer surface of the genitals. Infants that pass through the vaginal canal in a female with an outbreak of genital herpes can lead to neonatal herpes, characterized by multiple vesicular lesions on the skin or involvement of internal organs or the central nervous system. Infants with CNS herpes present with temporal encephalitis can commonly present with seizures, tremors, and lethargy. Type 2 HSV becomes latent in the sacral ganglia. These organisms can be visualized on Tzanck smear, which is a scraping of an ulcer base for evidence of multinucleated giant cells. Cowdry A inclusions are also present in Herpes infection, which are eosinophilic nuclear inclusions composed of nucleic acid and protein. Acyclovir is commonly used as treatment for herpes infections.



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Characteristics

Enveloped
Envelope
Herpes Simplex Virus has an envelope, which is an outer membrane that covers the protein capsid and helps the virus to enter host cells.

Double Stranded DNA
DNA Double-helix
Herpes simplex virus is a DNA virus, meaning its genetic code consists of deoxyribonucleic acid as opposed to ribonucleic acid.

Linear
Line
HSV genome is double stranded and in a linear arrangement as opposed to a circular formation.

Signs and Symptoms

Type 1 HSV
Harp-sign (1) Wand
There are two types of Herpes simplex virus. Type 1 HSV causes oral herpes, commonly called cold sores. Other manifestations include herpetic gingivostomatitis, keratoconjunctivitis, and temporal lobe encephalitis. Typically type I HSV infections occur above the waist but can occasionally occur below as well.

Gingivostomatitis
Ginger-in-mouth
Herpetic gingivostomatitis is often the initial presentation of the first herpes infection and is usually caused by Type I HSV. Because it is the first outbreak, symptoms are usually more severe than the typical cold sore and is characterized by inflammation of both of the oral mucosa and gingiva. The disease presents as multiple pinhead vesicles in the mouth which rupture and form painful ulcerations.

Keratoconjunctivitis
Carrot-eyes
Type I HSV can cause keratoconjunctivitis, which is inflammation of the cornea and conjunctiva. Infection typically presents with swelling and pain of the conjunctiva and eyelids, accompanied by small white pruritic lesions on the cornea. Infection can cause dendritic ulcers that have a characteristic dendritic pattern with fluorescein stain.

Encephalitis of Temporal Lobes
Brain-in-flames on Temple
Herpes simplex encephalitis is typically caused by type 1 HSV and is thought to be caused by retrograde transmission of the virus from a peripheral site on the face along a nerve axon to the brain. The virus has a predilection for the temporal lobes of the brain and patients present with altered level of consciousness.

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Latent in Trigeminal Ganglia
Tri-gems
HSV type 1 typically remains latent in trigeminal ganglia and can become reactivated in periods of stress as cold sores.

Type 2 HSV
Harp-sign with (2) Tutu
Type 2 HSV is primarily a sexually transmitted infection that can cause clusters of inflamed vesicles on the outer surface of the genitals.

Genital Vesicles
Genital-gentleman with Vest
Type 2 HSV is primarily a sexually transmitted infection that can cause clusters of inflamed vesicles on the outer surface of the genitals.

Neonatal Herpes
Baby with Herpes-harp
Infants that pass through the vaginal canal in a female with an outbreak of genital herpes can lead to neonatal herpes, characterized by multiple vesicular lesions on the skin or involvement of internal organs or the central nervous system. Active outbreaks in patients who are pregnant are an indication for cesarean delivery.

TORCHES
Torch
HSV is one of the TORCHES infections that can pass from mother to fetus. Infants that pass through the vaginal canal in a female with an outbreak of genital herpes can lead to neonatal herpes, characterized by multiple vesicular lesions on the skin or involvement of internal organs or the central nervous system.

Latent in Sacral Ganglia
Sack
HSV type 2 typically remains latent in sacral ganglia and can become reactivated in periods of stress.

Diagnosis

Tzanck Test
Z-tank
Herpes Simplex Virus can be visualized on Tzanck smear, which is a scraping of an ulcer base for evidence of multinucleated giant cells.

Multinucleated Giant Cells
Nuclear Giant-shell
Multinucleated giant cells are formed by the union of several distinct cells and can be indicative of herpes infection when visualized on Tzanck test.

Cowdry A Inclusions
Cow-dry
Cowdry body A inclusions are indicative of Herpes infection, which are eosinophilic nuclear inclusions composed of nucleic acid and protein.

Treatment

Acyclovir
Apple-cyclops
Acyclovir is an antiviral drug that is an analogue of guanosine. It is primarily used for the treatment of herpes simplex virus infections.

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