Varicella Zoster Virus (VZV)

Varicella zoster virus (VZV) is third of the eight viruses in the herpesviridae family and is the cause of chicken-pox and shingles. This virus is an enveloped double stranded linear DNA virus. Primary VZV infection results in chickenpox, which is a highly contagious illness that typically begins with a vesicular skin rash on the head and body. The rash is usually extremely itchy and can umbilicate and form scabs. Adults that get infected with primary infection commonly have more severe disease manifestations with more widespread rash and are more likely to experience complications such as pneumonia or encephalitis. Even when clinical symptoms resolve, the virus remains dormant in the trigeminal and dorsal root ganglia and can reactive later in life to produce shingles, commonly called herpes zoster. Shingles is characterized by a painful blistering skin rash with a specific dermatome distribution on the body. Although the rash usually heals, some can suffer from residual nerve pain in a condition called postherpetic neuralgia. The organism can be identified via tzanck smear with visualization of multinucleated giant cells or the presence of cowdry A inclusions. Antiviral drugs like acyclovir can be used to reduce the severity and duration of VZV infection.



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Herpesvirus 3
Harp-virus on (3) Tree
This virus is the third virus in the herpesviridae family and commonly referred to as HHV3.

Characteristics

Enveloped
Envelope
Varicella zoster 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
VZV virus is a DNA virus, meaning its genetic code consists of deoxyribonucleic acid as opposed to ribonucleic acid. Like all DNA viruses except Parvovirus, the genome consists of double stranded DNA and has a linear arrangement as opposed to circular.

Signs and Symptoms

Chickenpox
Chicken-box with Rash
Primary VZV infection results in chickenpox, which is a highly contagious illness that typically begins with a vesicular skin rash on the head and body. The rash is usually extremely itchy and can umbilicate and form scabs.

Pneumonia
Nude-Mona
Adults that get infected with primary varicella infection commonly have more severe disease manifestations with widespread rash and are more likely to experience complications such as pneumonia or encephalitis. Pneumonia refers to inflammation of the alveoli in the lungs and is associated with fever, chest symptoms, and consolidation on chest x ray.

Encephalitis
Brain-in-flames
Adults that get infected with primary varicella infection commonly have more severe disease manifestations with widespread rash and are more likely to experience complications such as pneumonia or encephalitis. Encephalitis refers to an acute inflammation of the brain. Symptoms commonly include headache, fever, confusion, and fatigue and can lead to seizures, convulsions, and memory problems.

Trigeminal and Dorsal Root Ganglia
Tri-gem and Door Root
After clinical symptoms resolve, the virus remains dormant in the trigeminal and dorsal root ganglia and can reactive later in life to produce shingles.

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Shingles
Roof-shingles
This virus remains dormant in the trigeminal and dorsal root ganglia and can reactivate later in life to produce shingles, commonly called herpes zoster. Shingles is characterized by a painful blistering skin rash with a specific dermatome distribution on the body. Although the rash usually heals, some can suffer from residual nerve pain in a condition called postherpetic neuralgia.

Diagnosis

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

Multinucleated Giant Cells
Nuclear Giant-shell
Varicella Zoster Virus can be visualized on Tzank smear, which is a scraping of an ulcer base for evidence of multinucleated giant cells.

Cowdry A Inclusion
Cow-dry
Cowdry body A can be indicative of Varicella zoster virus, 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. Acyclovir can be used to reduce the severity and duration of VZV infection.

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