

Viral Pathogenesis

Viral Pathogenesis

- Viral pathogenesis is the process by which a viral infection leads to disease.
- The consequences of viral infections depend on the interplay between a number of viral and host factors

Koch's Postulates

to identify the causative agent of a particular disease; the microorganism or other pathogen must be **present in all cases of the disease**

- the pathogen can be isolated from the diseased host and **grown in pure culture**
- the pathogen from the pure culture must **cause the disease when inoculated into a healthy, susceptible laboratory animal**
- the pathogen must be **reisolated** from the new host and **shown to be the same** as the originally inoculated pathogen

INFECTION

Periods of Exposure to Any Infection

- PRENATAL PERIOD (BEFORE BIRTH)
- PERINATAL PERIOD (DURING BIRTH)
- POSTNATAL PERIOD (AFTER BIRTH)

Prenatal Infection

1. Oocyte (BVD virus), Spermatozoon (IBR virus = BHV-1)
2. When maternal infections in pregnancy are transmitted to the embryo or fetus
3. Inutero (infections in uterine mucosa or walls) BHV-1
4. Transplacental (via placenta during maternal viraemia) BTV, AKA, BVDV

Perinatal Infection

1. Maternal Contagion

With urine and feces (CMV, BRV)

2. latent infections (Herpesvir.)

3. Iatrogenic Transmission (use of infectious materials)

Postnatal Infection

- Direct contact (RPV, CDV)
- Inhalation (IBR, PI-3, Flower)
- Oral (BRV, Enterovirus, BSE)
- Venereal (Coital exanthema)
 - Sexual (IBR, EBL)
- Transfusion (HBV, HCV, HIV)
 - Sperma (IBR, EBL)
 - Cutaneal (ORF)
- Biting (Rabies, FeLV, FIV)
- Air (Air-borne) (Foot-FMD)
- Vector (BTV, AKAV, BEFV)

Primer Replication and Propagation

postnatal infections

- **Primary Replication**

- The place of primary replication is where the virus replicates after gaining initial entry into the host.

- **Viremia** → The period in which the virus that has completed its proliferation is transported to reach the tropism cell group. The most obvious symptom is fever. Some diseases can have a two-phase viremia period.

- **Acute Infection**

- Recovery with no residue effects
- Death
- Proceed to chronic infection

- **Viral Persistence**

Progressive and slow developing form of infection. This may be due to the inadequacy of the host immunity system, as well as the fact that the agent may escape from the immune system, and in some cases due to the low virulence of the causative agent.

Persistent Infections

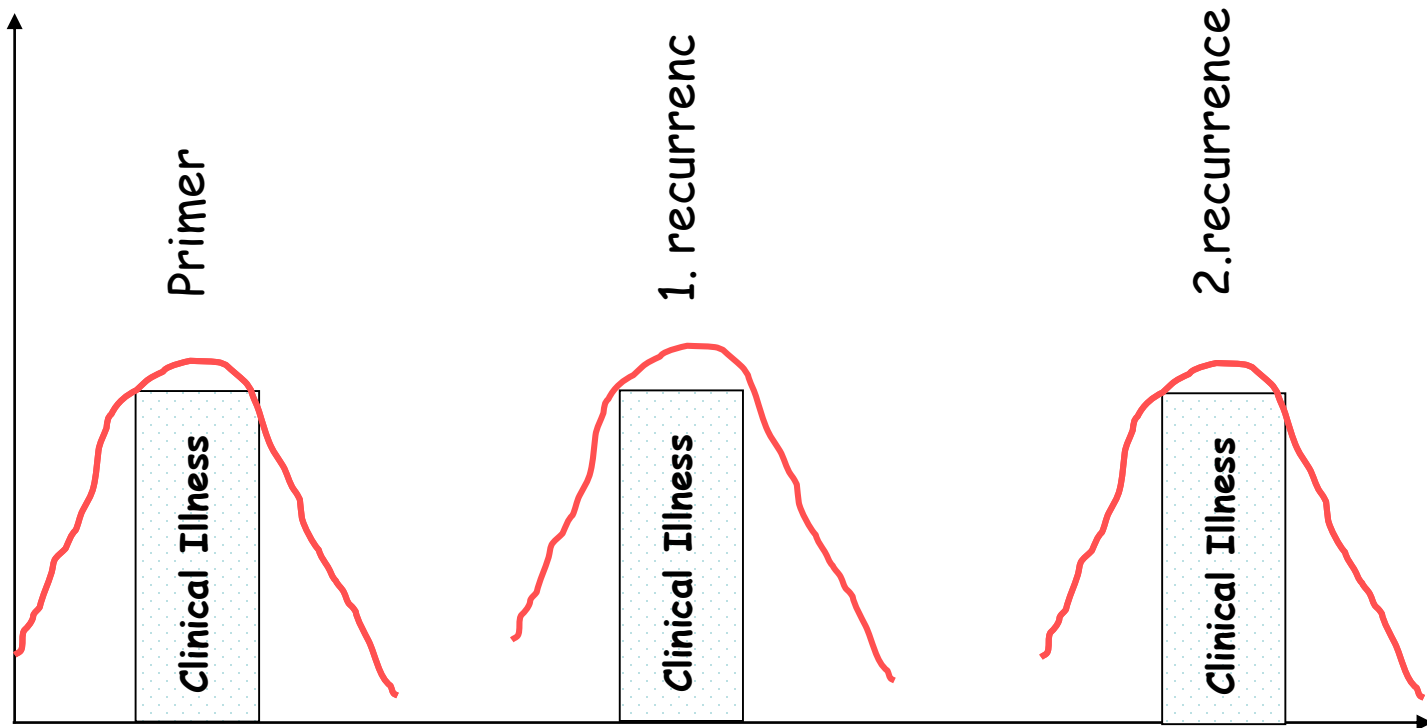
- Chronic Infections (Old Dog Encephalitis, Foot)
- Slow Infections (Retroviral infections, EBL, CAE, MV, AIDS etc.)
- Latent Infections (All Herpesvirus inf.)

- **Chronic Infection**

- Silent subclinical infection for life
- Reactivation to cause acute disease e.g. herpes and shingles.
- Chronic disease with relapses and exacerbations e.g. HBV, HCV.

Latent Infections

It is characterized by the occasional repetition of the acute disease table. Herpesvirus infections are the best example of this. Repeated primary infection is called recurrent infection.



The Importance of Persistent Infections

1. Epidemiological Importance,
2. They are reactive and may present acute disease at any time,
3. Immune pathological diseases,
4. Cause development of neoplasms.

Infection

- The course of the disease is examined in two groups according to the prevalence of clinical presentation;
- Generic Infection common to whole organism
- Local Infection. Only for a system or tissue group (BRV)