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DNA-Non-Enveloped Viruses

Adenoviruses

Cause

- Keratoconjunctivitis
- Hemorrhagic cystitis
- Upper and lower Resp. tract infection
  - e.g. Gastroenteritis
- Pharyngitis
- Pneumonia
- Conjunctivitis

Important properties

1. Ds-DNA linear non enveloped
2. Icosahedra nucleocasid
3. They are only viruses with a fiber protruding from each of 12 vertices of the capsid

- These fibers are
- There are 41 known Antigenic types
- All adenoviruses have group specific Ag located on the hexon protein

- They are toxic to human cells when purified from viruses
- Fiber protein is type specific Ag
- Group specific Ag located on hexon protein
- Type specific Ag

Organs of attachment

- Has hemagglutinin Ag

So 1 page
Summary of replication cycle

v. attachment via Fiber on specific receptor

VS. penetrate cell

VS. uncoating and release v. DNA

Nucleus

Early transcription by host cell DNA dependent RNA polymerase

To formation Early mRNA

Translated to Non structural protein (replicating enzyme)

Go to Nucleus

Late transcription to mRNA and late translation to structural protein

V. DNA replication

VS. Release by cell lysis (rupture)

Virion assembly in the nucleus

Go to Nucleus
Transmission and epidemiology

Aerosol droplet
Feco-oral route

They are endemic, worldwide, certain type associated with specific syndromes

Direct inoculation of conjunctiva

Pathogenesis and immunity

They infect mucosal epithelium of resp. tract (upper or lower)

Acute infection cause death of cells

Gastroenteritis

G.I.T

Epidemic keratoconjunctivitis
Hemorrhagic cystitis
Infantile gastroenteritis

Adenovirus also cause latent infection particularly in

Adenoidal tissue
Tonssillor tissue

Resp. disease

Cause
3,4,7
8,19
11,12
40,41

3page
Clinical finding of adenoviruses

In URT
  Cause
    Pharyngitis
    Pharyngo-conjunctivitis
      acute respiratory tract infection characterized by
        Fever
        Sore throat
        Coryza and conjunctivitis

Lower Respiratory Tract
  Cause
    Atypical pneumonia
      characterized by
        Fever
        Pathyconsolidation
        Cough

Gastroenteritis
  Characterized by
    Nore. Bloody diarrhea occurs mainly in children under 2 years
      Hemorrhagic cystitis
        characterized by
          Hematuria
          Dysuria
Lab. DX

Isolation of the virus on tissue culture

Serology: Four fold greater in Ab titer

Positive by using

Complement fixation test

Homagglutination test

Treatment and prevention

No. antiviral therapy

No vaccine

Hygienic control

Another DNA non enveloped viruses

Papilloma viruses

Disease

Papillomas
Which is
Benign tumors of sequumeus cells

Human papilloma virus 16 (Hpv. 16)

Carcinoma of the cervix

Important properties

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Important properties

- DS-circular DNA
- Non enveloped
- Icosahedral symmetry
- There are at least 60 types of HPVS

E. 6  E. 7 [Early]
Is early gene associated with carcinogenesis because they encoded proteins these protein bind to protein encoded by tumor suppressor genes in human cells e.g. P53 genes and retino-blastoma gene. ........ so lead to cancer

Skin wart
- HPV-1-HPV-4

There in noticeable connection of certain type to infect certain tissues e.g.
- Genital wart
- HPV 6 – HPV-11
Summary of replication of HPV.

1. Little in known
2. In human tissue, infection virus particles are found in terminal differentiated sequamous cell rather than in basal cells
3. In malignant cells
   - Viral DNA is integrated into host cell DNA in the vicinity of cellular – proto-oncogenesis and E6 and E7 are over expressed
   - Lead to malignancy
   - Benign tumor
   - Malignant tumor
4. Whereas in latently infection
   - Non malignant cell
   - The V. DNA in episomal
   - E6, E7 are not over express
Pathogenesis and immunity of HPV

**Hp V.s infect squemous epith. Cell (S E C)**
- Produce
- Characteristic vacuole called koilocytosis

**Most wart are begnine and not progress to malignant**

- The protein encoded by virus genes E6 and E7 interfer with growth inhibitory activity of the proteins encoded by tumor suppressor
- So
- Contribute to encogenesess by these viruses

**Hpv infection associated with**
- Carcinoma of
  - Uterine cervix
  - Penis

**Immunity**
- Both C M J and humoral immunity induced by viral infection and involve in spontinous regression of the wart
Clinical Finding

Papiltamas in various organs

Caused by specific H P V types

Skin and planter wart

H P V-1-H P V.4

Carcinoma of the uterine cervix and the penis and intraepithelial neoplasia

H P V. 16 and 18

Occult premalignant lesion of cervix and penis may be revealed by applying certain acid to tissue

Genital wart (condylomata acuminate)

H P V.6, 11

DNA by hybridizations (P C R) to detect present of v. DNA are commercially available

Presence of koilocytes vacuoles in the tissue indicates H P V infection

Lab. dx

Usually diagnosed clinically

No virus isolation by tissue culture

Serologic test

rare
Treatment and Prevention of HPV.

Genital warts use

Skin wart

Liquid nitrogen

Planter warts

Removal surgically

Rx with salicylic acid topically

Podophyllin

INF alpha

To prevent recurrent

No vaccination

Another DNA non enveloped viruses

Parvovirus's

Serotype B-19 in medically important

Cause

Erythema infectiosum or fifth disease ) self-limited disease ) of children characterized By slapped check rash

Mainly infect immature RBCS precursor and kill them

SS- linear DNA

Icocoheral nucleocapsid

More severe manifestation is a plastic crisis in the patient with sickle cell anemia

N0 Rx