

Adenovirus

intro.

- 1) first isolated from adenoids
- 2) replicate + produce disease in epithelial cells
- 3) many infections are subclinical + persist for months
- 4) oncogenic to animals
- 5) used to:
 - A) molecular + biochem. studies in eukaryotic cell
 - B) vectors for gene therapy
 - C) induction of tumors in animal for research + therapeutic

structure

- 1) size 70-90 nm
- 2) linear ds DNA
- 3) a virus encoded protein is coval. linked to the end of genome (terminal)
- 4) core proteins
- 5) icosahedral, 252 capsomers
 - 1) hexons (240), penton (12)
 - 3) fibers (12) at each vertex
- 6) unenveloped (naked)
- 7) DNA can be isolated in an infectious form + less infectivity when terminal protein is removed (proteolysis)
- 8) hexon, penton, fibers → antigens imp. in viral classification
- 9) penton → toxin-like activity cause cytopathic effect
- 10) fiber → hemagglutinating activity

classification

- 1) at least 57 antigenic types
- 2) one third cause human disease
- 3) divided into 7 groups (A-G) based on genetic, physical, chemical, bio-effect
- 4) hemagglutination + % of G+C and oncogenic potential:
 - A) tumorigenicity in vivo
 - B) transformation of cells

replication

- 1) only in epithelial
- 2) attach via fibers
- 3) host receptor is CAR, mem. of Ig gene superfamily
- 4) cytopathic effects:
 - A) rounding
 - B) enlargement
 - C) aggregation of effected cells into grape-like clusters

epidemiology

- 1) comm. outbreak is unusual
- 2) transmission:
 - A) respiratory infection
 - 1) inhalation of droplets
 - 2) contaminated hand
 - 3) direct contact with contaminated surface
 - B) intestinal tract
 - fecal-oral route
 - C) eye infection
 - 1) contaminated hand
 - 2) " towels
 - 3) " eye drops, ophthalmic instrument

Adenovirus

Clinical manifestation

respiratory disease

- 1) Group C, serotype (1-7)
- 2) infant, children & symptoms
 - A) fever, B) malaise
 - C) sore throat, D) cough
 - E) hoarseness
- 3) pneumonia → 10% of cases + fatal
- 4) adenovirus is the cause of acute resp. disease syndrome among military recruit
- 5) ARDS is characterized by fever, cough, sore throat, nasal congestion, malaise + sometimes lead to pneumonia

Keratoconjunctivitis

- 1) Group D, serotypes 8, 19, 37
- 2) characterized by:
 - A) aggressive conjunctivitis
 - B) photophobia
 - C) lymphadenopathy
 - D) pain
 - E) superficial punctate keratitis

Gastroenteritis

- 1) Group F, serotype 40 + 41
- 2) in young children + neonates
- 3) cause occasional outbreaks
- 4) 2nd most common viral cause of gastroenteritis (7-15% of cases)
- 5) similar to rotavirus (1st cause)
- 6) most ppl have antibodies against enteric adenovirus by age of 3

lab diagnosis

- 1) virus isolation & body fluid grown on:
 - 1) hep-2 cells
 - 2) human embryonic cells
 - 3) primary monkey kidney cells
- 2) Antigen & fecal sample
 - A) EITSA
 - B) latex agglutination
 - C) immunofluorescence
- 3) PCR
- 4) Serology & antibodies infected or recovered

Treatment + prevention

- 1) No Anti viral drug therapy
- 2) Treatment is supportive
- 3) live adenovirus vaccine for military use only (infrequently used)
- 4) swimming pool associated conjunctivitis prevented by adequate levels of chlorine in water
- 5) prognosis:
 - A) self-limiting disease
 - B) recovery is usual
 - C) disseminated infection in immuno-compromised