

## ***Paramyxoviridae***

Negative sense, single-stranded RNA, enveloped viruses that replicate in the cytoplasm.

1. Parainfluenza viruses 1, 2, 3 and 4 (PIV)
2. Respiratory syncytial virus (RSV): the major pediatric respiratory tract pathogen
3. Metapneumovirus
4. Measles فيروس الحصبة
5. Mumps فيروس النكاف أبو دغيم

**Transmission:** respiratory secretions, aerosols.

**Tropism:** epithelial cells of the respiratory tract.

### **Clinical features:**

- A. Common cold: PIV, RSV and metapneumovirus
- B. Laryngitis: PIV (with hoarseness of voice, barking cough)
- C. Croup (inflammation of the upper airway, larynx and trachea): PIV, RSV
- D. Bronchiolitis: RSV (the most common cause in infants)
- E. Pneumonia: RSV
- F. Otitis media (التهاب الأذن الوسطى): PIV

### **Diagnosis:**

Rapid antigen detection.

PCR.

**Treatment:** Supportive, ribavirin (antiviral) can be used for RSV lower respiratory tract infection.

**Prevention:** Vaccines have not been available so far. Maybe soon for RSV.

**Epidemiology:** For RSV, about 70% of infants are infected by age 1 and almost all by age 2 years. PIV is also an important pediatric pathogen. Reinfections are common.

### **Measles:**

Highly infectious virus. The disease is characterized by fever, respiratory symptoms, and a maculopapular rash. Complications are common.

**Transmission:** respiratory secretions.

Viremia occurs transferring the virus into the skin and eye. Central nervous system involvement is common (encephalitis, postinfectious encephalomyelitis, and subacute sclerosing panencephalitis). The most common complication of measles is otitis media. Pneumonia caused by secondary bacterial infection is the most common life-threatening complication of measles.

**Koplik spots** (blue/white raised spots on red base on the buccal mucosa opposite the first molar) are pathognomonic/diagnostic of measles (these spots appear one day before the onset of rash. Measles infection causes immune suppression that is transient.

There is only one antigenic type of measles virus. Infection results in life-long immunity.

**Diagnosis:** serology IgM antibodies.

**Treatment:** Supportive. Vitamin A treatment in developing countries has decreased mortality and morbidity.

**Prevention:** Live-attenuated vaccine MMR (measles mumps rubella vaccine).

### **Mumps:**

Highly infectious virus. Enlargement of one or both salivary glands. The disease is mild in children. Complications occur in adults. At least one-third of all mumps infections are subclinical. Central nervous system involvement is common (aseptic meningitis). Testicular inflammation (orchitis) is extremely painful and can lead to sterility. Ovarian inflammation can occur (oophoritis). Pancreatitis is reported as well.

There is only one antigenic type of measles virus. Infection results in life-long immunity.

**Transmission:** respiratory secretions.

**Diagnosis:** serology IgM antibodies, PCR.

**Treatment:** Supportive. Vitamin A treatment in developing countries has decreased mortality and morbidity.

**Prevention:** Live-attenuated vaccine MMR (measles mumps rubella vaccine).

### ***Togaviridae***

Positive sense, single-stranded RNA, enveloped viruses that replicate in the cytoplasm.

Rubella virus: the causative agent of German measles (rubella الحصبة الألمانية)

The mildest form of viral infections that cause skin rash.

Rubella is a three-day rash (morbilliform rash) with low-grade fever.

Risk of congenital infection. The classic triad of congenital rubella consists of cataracts, cardiac abnormalities, and deafness.

**Transmission:** respiratory secretions, mother-to-child

**Diagnosis:** serology IgM antibodies, PCR.

**Treatment:** Supportive.

**Vaccination:** Live-attenuated vaccine MMR (measles mumps rubella vaccine).

### **Viruses that cause gastroenteritis:**

Transmission is fecal-oral, diagnosis is by antigen detection, PCR or electron microscopy

1. Rotavirus: double-stranded non-enveloped RNA virus with a segmented genome. The most common cause of gastroenteritis in infants. Live-attenuated vaccine is available.
2. Norovirus: single-stranded positive sense RNA non-enveloped virus. The most common cause of gastroenteritis in adults.
3. Astrovirus: single-stranded positive sense RNA non-enveloped virus.
4. Sapovirus: single-stranded positive sense RNA non-enveloped virus.