

Two groups of single stranded positive sense non-enveloped RNA viruses:

A. Rhinoviruses

B. Enteroviruses

Rhinoviruses:

More than 150 types classified into 3 groups (A, B and C).

Cellular receptors: intercellular adhesion molecule-1 (ICAM-1) and low-density lipoprotein receptor (LDLR).

Acid labile (complete inactivation occurs at a pH of 3.0).

Disease: Upper respiratory tract infection (also called: common cold, coryza, rhinosinusitis).

The symptoms include: Chilliness is an early symptom of the common cold. Other symptoms include runny nose, sore throat, coughing, sneezing, nasal congestion, headache, low-grade fever and fatigue. Asymptomatic infection can occur.

Acute asthma exacerbations.

Short incubation period: 2-4 days. The illness usually lasts 7 days.

The disease is common in fall, winter and spring.

Transmission: hand-to-hand, hand-to-eye, or hand-to-object- (e.g., doorknob) to-hand contamination. Rhinoviruses can survive for hours on contaminated environmental surfaces.

Diagnosis: real-time PCR.

Treatment: symptomatic. Prevention: hand washing.

Enteroviruses:

1. Poliovirus (الفيروس المسبب لشلل الأطفال)

Three antigenic types of polioviruses.

Transmission: The mouth is the portal of entry of the virus, and primary multiplication takes place in the oropharynx or intestine. Poor hygiene and sanitation is linked to virus spread.

After 1–2 weeks incubation disease may appear, which can be:

1. Asymptomatic infection in 90–99% of the cases (sub-clinical disease)
2. Acute febrile illness: the most common form of symptomatic disease. Includes: fever, headache, nausea, vomiting, constipation, and sore throat.
3. Nonparalytic poliomyelitis (aseptic meningitis – التهاب السحايا): stiffness and pain in the back and neck. Recovery is rapid and complete.
4. In less than 1/1000: Paralytic poliomyelitis (شلل): flaccid paralysis resulting from lower motor neuron damage and subsequent muscle atrophy. Fatality in 5–10 % of the cases (due to respiratory failure caused by depression of the respiratory centers).

Poliovirus can spread along axons of peripheral nerves to the CNS, where it continues to progress along the fibers of the lower motor neurons to increasingly involve the spinal cord or the brain.

Diagnosis: virus culture, PCR.

This is the only material required for the exam. No other source is needed

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Immunity is permanent following infection by each antigenic type. Cross-protection is observed between types.

Prevention: Both live-virus (oral polio vaccine OPV, also called Sabin vaccine) and killed-virus (inactivated polio vaccine IPV, also called Salk vaccine) vaccines are available.

2. Coxsackieviruses A and B

Diseases:

- A. Aseptic meningitis: full recovery in most patients.
- B. Herpangina: fever and sore throat with discrete vesicles on the posterior half of the palate, pharynx, tonsils, or tongue. The illness is self-limited and most frequent in small children. Caused by group A coxsackieviruses.
- C. Acute febrile illness with or without skin rash especially during summer.
- D. Common cold.
- E. Hand-foot-and-mouth disease: caused by coxsackievirus A16 and enterovirus 71. Oral and pharyngeal ulcerations and a vesicular rash of the palms and soles that may spread to the arms and legs. Self-limited.
- F. Pleurodynia (epidemic myalgia): Caused by group B coxsackieviruses. Fever and stabbing chest pain. Self-limited.
- G. Myocarditis: acute inflammation of the heart or its covering membranes (pericarditis). Can be fatal.

3. Echoviruses:

4. Enteroviruses:

5. Parechoviruses:

Diseases: Aseptic meningitis, encephalitis, febrile illnesses with or without rash, common cold, and acute hemorrhagic conjunctivitis (enterovirus 70).

No vaccines or antiviral drugs are currently available for prevention or treatment of these diseases.

Diagnosis: real-time PCR.