Parainfluenza virus infections

- Parainfluenza viruses are ARN viruses that belong to the Paramyxoviridae family.
- Parainfluenza infection manifests as croup (serotype 1 and 2), lower respiratory tract infection (bronchiolitis, pneumonia – serotype 3), or mild respiratory infection (serotype 4).

Epidemiology

- Parainfluenza viruses type 1 and 2 produce epidemics in the autumn, virus type 3 is detected throughout the year, with a peak in spring, the seasonality of virus type 4 has not been well established.
- Infection is conveyed from a sick person by the aerial-droplet route.
- Incubation period has varied from 3 to 6 days.
- Infants are particularly susceptible.

Epidemiology

- According to serological examinations carried out by the American authors, many children get infected with parainfluenza during their first years of life.
- Adults and older children, who usually have an attack of this disease in early childhood, contract the disease much less frequently, the disease runs a milder course.

Pathogenesis

- Parainfluenza viruses penetrates the human organism through nasal, oral and pharyngeal mucosa, it multiplies in the mucosa of the respiratory tract, but viraemia is rarely produced.
- The multiplication rate is slower than that of influenza virus.
- Cell fusion is produced and syncytial multinucleated cells appear in the mucosa.
- The immune response is based on the local production of IgA, neutralizing antibodies in the serum, and T- cell mediated immunity.

Clinical manifestations

Parainfluenza viruses produce a wide spectrum of diseases:

- ✓ **Common cold (coryza), hoarseness, tracheobronchitis** (in older children and adults)
- ✓ **Pneumonia, bronchiolitis** (type 3) – it appears in small children and manifests with cough, wheezing, tachypnea, intercostal retractions, with rhonchi, wheeze, coarse breath sounds.
- ✓ **Croup in children** (type 1) – it manifests as severe laryngotracheobronchitis, requires urgent hospitalization.

  It is characterized by fever, barking cough, stridor, occasionally airway obstruction and hypoxia. Bacterial superinfection worsen the prognosis.
- ✓ **Mild respiratory disease** (type 4).

Diagnosis

Epidemiologic and clinical data are not sufficient for the diagnosis.

Laboratory diagnosis:

- ✓ Detection of the virus in tissue cultures(from throat swabs, nasopharyngeal or respiratory tract secretions)
- ✓ Detection of viral antigen (immunofluorescence, ELISA)
- ✓ Serologic diagnosis may be made by ELISA or by neutralization or complement-fictation tests (are less sensitive in children < 4 mounths of age).

Treatment and Prevention

- The therapy is symptomatic and pathogenic.
- Antibiotics are used in case of bacterial complications.
- Severe cases need hospitalization.
- There is no vaccine available, general preventive methods should be applied.