

## Infectious Mononucleosis: Pathogenesis, Symptoms and Treatment

Infectious mononucleosis is a self-limiting lymphoproliferative disorder caused by the Epstein-Barr virus (Human Herpes type 4), a member of the herpesvirus family. This condition is characterized by fatigue, fever, pharyngitis, and lymphadenopathy.

Infectious mononucleosis may occur at any age but occurs principally in adolescents and young adults in developed countries. EBV is one of the most successful viruses in evading the immune system, infecting about 90% of humans and persisting for the lifetime of the person.

EBV spreads from person to person primarily through contact with infected oral secretions.

**Also known as:** “Kissing Disease”

### Pathophysiology

EBV is transmitted via **salivary contact**. Upon entry, the virus infects:

- **Epithelial cells** of the nasopharynx and salivary glands
- **B lymphocytes**, which express the CD21 receptor (EBV receptor)

EBV enters B cells and can either:

- **Induce lytic infection**, leading to cell lysis
- **Establish latency**, integrating into the host genome

Infected B cells proliferate and generate **heterophile antibodies**, which cross-react with animal RBC antigens (basis of the Monospot test).

The immune system, especially **CD8+ cytotoxic T cells**, mounts a strong response against infected B cells:

- These activated T cells appear as **atypical lymphocytes** on peripheral blood smear.

EBV remains latent in oropharyngeal B cells and may be intermittently shed in saliva, even in asymptomatic individuals.

### Transmission

- **Mode:** Oral secretions
- **Common in:**
  - Close contact situations (e.g., kissing)
  - Crowded living conditions (e.g., dormitories, households)
- Not highly contagious but **asymptomatic viral shedding** contributes to spread.

## Clinical Features

**Incubation Period:** 4–8 weeks

**Classic Triad:**

1. **Fever** — often peaks in the afternoon or evening
2. **Pharyngitis** — may be severe, with tonsillar exudates
3. **Lymphadenopathy** — especially posterior cervical nodes

**Other Findings:**

- **Fatigue** , **malaise** , **headache** , **myalgia**
- **Splenomegaly** (50% of cases); risk of rupture
- **Hepatitis** (mild, self-limiting, may cause jaundice)
- **Palatal petechiae** , rash (especially if given ampicillin/amoxicillin)

## Laboratory Findings

- **Leukocytosis** (WBC 12,000–18,000/ $\mu$ L)
- **Atypical lymphocytes** (>10–20%)
- **Positive heterophile antibody test** (Monospot test; peaks in week 2–3)
- **Elevated liver enzymes** (ALT, AST)
- **EBV-specific antibodies:**
  - VCA-IgM (acute infection)
  - VCA-IgG (past infection)
  - EBNA (develops later)

**Note:** In immunocompromised or HIV-risk patients, **HIV tests** (RNA, p24 antigen, CD4 count) are recommended to exclude acute HIV infection.

## Diagnosis

**Clinical + Laboratory:**

- History of prolonged fatigue, sore throat, and adenopathy
- Monospot test (heterophile antibodies)
- CBC with atypical lymphocytosis
- EBV serologies if Monospot is negative or equivocal

## Management

**Supportive and Symptomatic Treatment:**

- **Rest** and **hydration**
- **NSAIDs or acetaminophen** for fever and sore throat
- **Avoid contact sports** for 3–4 weeks due to splenic rupture risk
- **Corticosteroids** for:
  - Airway obstruction (due to tonsillar hypertrophy)

- Severe thrombocytopenia
- Hemolytic anemia
- Myocarditis or neurologic complications

**Antivirals:** Not routinely recommended; limited efficacy

**Antibiotics:** Avoid ampicillin/amoxicillin — can cause rash

## Complications

### Hematologic:

- Hemolytic anemia (due to cold agglutinins; anti-i antibodies)
- Thrombocytopenia
- Neutropenia

### Neurologic:

- Aseptic meningitis
- Encephalitis
- Guillain-Barré syndrome
- Optic neuritis
- Bell's palsy
- Psychosis

### Hepatic:

- Mild hepatitis (common)
- Elevated LFTs
- Rarely jaundice or liver failure

### Respiratory:

- Upper airway obstruction (tonsillar hypertrophy, lymphadenopathy)
- Interstitial infiltrates (often subclinical)

### Splenic Rupture:

- **Rare but life-threatening**
- Occurs typically 2–3 weeks after symptom onset
- Avoid strenuous activity and contact sports

### Malignancy Risk (Long-Term):

- Hodgkin lymphoma
- Burkitt lymphoma (esp. in endemic areas)
- Nasopharyngeal carcinoma
- Post-transplant lymphoproliferative disorder (PTLD)

## Prognosis

- Most patients recover within **2–4 weeks** , but fatigue may persist for **up to 3 months** .
- EBV persists latently; reactivation is rare in immunocompetent individuals.

## High-Yield

Feature	Description
<b>Causative agent</b>	Epstein-Barr virus (EBV, HHV-4)
<b>Transmission</b>	Saliva (e.g., kissing, shared utensils)
<b>Classic triad</b>	Fever, pharyngitis, cervical lymphadenopathy
<b>Other signs</b>	Splenomegaly, fatigue, exudative tonsillitis
<b>Lab findings</b>	Atypical lymphocytes, heterophile antibodies (Monospot)
<b>Complications</b>	Splenic rupture, neurologic, hematologic, hepatic involvement
<b>Treatment</b>	Supportive; corticosteroids for severe complications
<b>Prevention</b>	No vaccine; avoid sharing utensils or kissing during illness