INFECTIOUS MONONUCLEOSIS: CURRENT CONCEPTS OF PATHOGENESIS, CLINICAL PRESENTATION, DIAGNOSIS AND MANAGEMENT

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Abstract. Infectious mononucleosis is a common viral disease most frequently caused by the Epstein–Barr virus (EBV), a member of the Herpesviridae family. The disease predominantly affects adolescents and young adults, although primary infection may occur at any age. Its clinical presentation ranges from asymptomatic infection to a pronounced systemic illness characterized by fever, tonsillopharyngitis, lymphadenopathy, and prolonged fatigue. The pathogenesis of infectious mononucleosis is closely associated with EBV infection of B lymphocytes and the subsequent activation of cellular immune responses. Early and accurate diagnosis helps prevent unnecessary antibacterial therapy and facilitates timely identification of potentially serious complications.

Keywords: infectious mononucleosis, Epstein–Barr virus, EBV, lymphadenopathy, atypical lymphocytes, serological diagnosis, complications.

Introduction. Infectious mononucleosis (IM) is an acute infectious disease most commonly associated with primary infection by Epstein–Barr virus (EBV), also known as human herpesvirus type 4. Although infection is frequently acquired during childhood and remains asymptomatic, primary infection during adolescence or young adulthood is more likely to produce the characteristic clinical syndrome of infectious mononucleosis [1,2].

Epidemiology and transmission. Epstein–Barr virus infection occurs worldwide and affects the majority of the human population. Transmission takes place primarily through saliva, which explains the common description of infectious mononucleosis as the "kissing disease." Infection may also occur through close personal contact and, less frequently, through blood products or organ transplantation [1,2]. The incubation period is usually approximately four to six weeks. In young children, primary infection is often asymptomatic or associated with nonspecific symptoms. The probability of symptomatic disease is influenced by age at primary infection and the characteristics of the host immune response [2,4]. Periodic viral reactivation and shedding in saliva may occur even in individuals without clinical symptoms. Therefore, transmission is not limited to patients with an obvious acute illness [1,4].

The pathogenesis of infectious mononucleosis is determined by the interaction between EBV and the host immune system. After entering the body through the oropharyngeal mucosa, the virus infects epithelial cells and B lymphocytes in the lymphoid tissue of the tonsils. Viral proteins promote B-cell activation and proliferation, allowing the virus to establish persistent infection [4,5].

The interaction between infected B lymphocytes, cytotoxic T cells, natural killer cells, and inflammatory mediators determines the intensity of clinical manifestations. An excessive or dysregulated immune response may contribute to systemic symptoms, including fever, marked fatigue, lymph node enlargement,

and hepatic involvement [4,5]. EBV also possesses mechanisms that enable it to evade immune surveillance and maintain lifelong latency.. In individuals with impaired immune control, EBV infection may be associated with severe complications and lymphoproliferative disorders [5,6].

Clinical manifestations. The classical clinical triad of infectious mononucleosis includes fever, pharyngitis, and lymphadenopathy. Symptoms usually develop gradually and may differ considerably in severity between patients.

Fever may persist for several days or weeks and is frequently accompanied by weakness, headache, myalgia, and reduced appetite. Pharyngitis is often characterized by enlarged tonsils with erythematous changes and, in some cases, a whitish exudate. Cervical lymphadenopathy, particularly involving the posterior cervical lymph nodes, is a characteristic clinical finding [2,3].

Fatigue is one of the most persistent symptoms. Although most patients recover within several weeks, some may experience reduced physical activity and tiredness for a longer period. Clinical manifestations in children are frequently less specific, which may result in delayed recognition of the disease [3].

Laboratory diagnosis and differential diagnosis. Typical findings include leukocytosis, relative or absolute lymphocytosis, and the presence of atypical lymphocytes. An increase in atypical lymphocytes is particularly useful when interpreted together with the patient's clinical presentation [2,3].

Serological testing is important for confirming acute EBV infection and distinguishing it from previous exposure. The most useful markers include antibodies against the viral capsid antigen (VCA) and EBV nuclear antigen (EBNA). The presence of anti-VCA IgM with the absence of anti-EBNA antibodies generally indicates primary or recent infection [1]. The heterophile antibody test, commonly known as the Monospot test, may be useful in selected clinical situations[1].

Complications and clinical significance. Although infectious mononucleosis is generally self-limiting, complications may occasionally develop and require urgent medical attention. Splenomegaly is clinically important because it increases the risk of splenic injury and, rarely, spontaneous rupture. Patients should be informed about the danger of abdominal trauma and advised to avoid contact sports and strenuous physical activity during the early recovery period [2,3]. Other complications include upper airway obstruction caused by severe tonsillar enlargement, hepatitis, autoimmune hemolytic anemia, thrombocytopenia, and neurological disorders [6,8].

Treatment and prevention. Adequate hydration, sufficient rest, and symptomatic relief of fever and throat pain are the main components of management. Paracetamol or other appropriate analgesic and antipyretic medications may be used according to age, clinical condition, and contraindications [2,3].

Antiviral medications are not routinely recommended for uncomplicated infectious mononucleosis because their clinical benefit has not been sufficiently demonstrated. Corticosteroids should also not be used routinely; their use may be considered in selected severe cases, such as significant upper airway obstruction or serious immune-mediated complications, under specialist supervision [2,3].

Physical activity should be restricted during the period of increased risk of splenic injury. Patients are generally advised to avoid athletic activity for at least three weeks after symptom onset, with gradual return to light, non-contact exercise when clinically appropriate. Decisions about returning to contact sports should be individualized [2]. There is currently no licensed vaccine specifically approved for the prevention of EBV infection. Preventive measures include avoiding the sharing of drinking vessels and personal items that may be contaminated with saliva, particularly during symptomatic illness [1].

Conclusion. Infectious mononucleosis remains an important clinical problem because of its diverse manifestations and potential complications. Epstein–Barr

virus is the principal etiological agent, while the intensity of the disease is strongly influenced by the host immune response. Recognition of the characteristic clinical triad, assessment of atypical lymphocytosis, and correct interpretation of EBV-specific antibodies are essential for establishing the diagnosis.

References:

1. Centers for Disease Control and Prevention. Laboratory testing for Epstein-Barr virus (EBV) [Internet]. Atlanta: CDC; 2024 Apr 10. Available from: https://www.cdc.gov/epstein-barr/php/laboratories/
2. Sylvester JE, Buchanan BK, Silva TW. Infectious mononucleosis: rapid evidence review. Am Fam Physician. 2023;107(1):71-78.
3. Leung AKC, Lam JM, Barankin B. Infectious mononucleosis: an updated review. Curr Pediatr Rev. 2024;20(3):305-322. Doi:10.2174/1573396320666230801091558.
4. Naughton P, Enright F, Lucey B. Infectious mononucleosis: new concepts in clinical presentation, epidemiology, and host response. Curr Opin Infect Dis. 2024;37(3):157-163. Doi:10.1097/QCO.0000000000001012.
5. Silva M, et al. Epstein-Barr virus: the mastermind of immune chaos. Front Immunol. 2024;15:1297994. Doi:10.3389/fimmu.2024.1297994.
6. Verbist K, Nichols KE. Cytokine storm syndromes associated with Epstein-Barr virus. In: Cytokine Storm Syndromes. Cham: Springer; 2024. Doi:10.1007/978-3-031-59815-9_16.
7. Centers for Disease Control and Prevention. About infectious mononucleosis (mono) [Internet]. Atlanta: CDC; 2024 May 9. Available from: https://www.cdc.gov/epstein-barr/about/mononucleosis.html.
8. Ikramov, U., Matyakubova, F., Rajabova, D., & Rahmonqulova, N. (2026). BOLALAR VA O'SMIRLARDA YUQUMLI MONONUKLEOZ: KLINIK-LABORATOR TASHXIS, ASORATLAR VA DAVOLASH TAMOYILLARI. JANUBIY OROL BO'YI TIBBIYOT JURNALI, 2(3), 214–218. https://doi.org/10.5281/zenodo.20535576