



## CYTOMEGALOVIRUS AND INFECTIOUS MONONUCLEOSIS

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**ABSTRACT**

Infectious mononucleosis is a common self limiting infection that typically affects children and adolescents caused by Epstein Barr virus [1]. The similar clinical presentation may be associated with cytomegalovirus, human herpes virus-6, human herpes virus-7, toxoplasmosis, human immunodeficiency virus, hepatitis A, adenovirus, rubella, herpes simplex virus, influenza, parainfluenza, rhinovirus and coronavirus [1]. The definitive diagnosis of infectious mononucleosis requires laboratory testing and the symptomatology alone cannot differentiate classical infectious mononucleosis from other diseases [2]. In elderly people, the clinical picture of infectious mononucleosis tends to be atypical often leading to diagnostic challenge [2]. Here we present a case of 53 year old male with infectious mononucleosis syndrome caused by cytomegalovirus.

**KEYWORDS :****INTRODUCTION:**

The triad of fever, pharyngitis and lymphadenopathy was first described in 1889 as "glandular fever" and the formal definition of infectious mononucleosis was made in 1920 [3]. The annual incidence of infectious mononucleosis in general population is about 5 cases per 1000 persons [3]. The annual incidence in those younger than 10 years or older than 30 years is less than 1 case per 1000 persons [3]. The most common causative agent of infectious mononucleosis is Epstein Barr virus and the second most common causative agent being the cytomegalovirus [1]. Cytomegalovirus accounts for 5-16% of infectious mononucleosis syndrome. Cytomegalovirus mononucleosis syndrome is suspected when antibody against Epstein Barr virus is negative [4].

**CASE REPORT:**

A 53-year-old male residing in Hong-Kong who is a known type 2 diabetic presented with ten days of high grade fever associated with fatigue, headache and loss of appetite. No history of seizure, altered sensorium, cough, breathing difficulty, abdominal pain, vomiting, loose stools, burning urination or bleeding manifestations.

On examination patient was conscious, oriented and dehydrated. Vital examination were blood pressure-110/70 mmhg, Pulse rate-82/minute, respiratory rate-18/minute, temperature-98 fahrenheit and SPO2-99% under room air. Systemic examination was normal. Blood investigations showed white cell count-10,800 with 55% lymphocytes and absolute lymphocyte count being 5,544 cells/cumm, Hemoglobin-13g/dl, Platelet -2,04,000, Alanine -transaminases- 98 U/L, aspartate transaminase -76 U/L. Peripheral smear showed relative lymphocytosis along with few reactive lymphocytes. C-reactive protein level was elevated [70.2mg/L]. Ultrasound abdomen showed mild hepato-splenomegaly. Chest X-ray was normal. Dengue serology, MPQBC, scrub typhus IgM and leptospirosis IgM were negative. COVID and H1N1 reverse transcriptase polymerase chain reaction were negative. Blood and urine cultures were negative.

Epstein Barr virus IgG was positive. Toxoplasmosis IgM was negative. HIV ELISA and rapid plasma reagent test were negative. PET CT whole body was done which showed hypermetabolic bulky tonsils likely inflammatory, FDG avid prominent cervical lymph nodes likely reactive and hepatosplenomegaly with diffuse increased FDG uptake in spleen with no focal lesion likely due to immune stimulation. Adenovirus and Epstein Barr virus viral load were negative. Cytomegalovirus viral load was detected with 14,416 copies/ml. Both cytomegalovirus IgM and IgG were positive. Patient was diagnosed to have mononucleosis syndrome caused by cytomegalovirus. Patient's fever gradually resolved. Patient was reassured regarding the spontaneous resolution of symptoms.

**DISCUSSION:**

Cytomegalovirus is an enveloped double stranded deoxyribonucleic

acid virus that like other herpes virus causes life- long latency after the primary infection [5]. Transmission is through contact with body fluids such as blood, saliva, urine, seminal fluid, tears, cervical secretions and breast milk [6]. Sometimes the infection transmission is possible following the solid organ and stem cell transplantation [6]. Cytomegalovirus seroprevalence has a potential association with education level, social status, household income, race and ethnicity [6].

The clinical features of Epstein Barr virus induced infectious mononucleosis include sore throat, lymphadenopathy, fever, fatigue and tonsillar enlargement [7]. Transient palatal petechiae and pharyngeal inflammation are also common [7]. Lymphadenopathy typically involves posterior group of cervical nodes but anterior cervical lymphadenopathy is also possible [7]. Adults with age more than 60 years have a higher rate of jaundice and are less likely to present with lymphadenopathy, sore throat and splenomegaly [7]. In patients with suspected infectious mononucleosis, the best initial diagnostic test will be heterophile antibody test [7]. But the test has a 25% false negativity during first week of illness [7].

In comparison with Epstein Barr virus infectious mononucleosis, Cytomegalovirus induced infectious mononucleosis presents at a higher age with male sex predisposition, prolonged fever and without sorethroat, cervical lymphadenopathy or tonsillitis [1].

**DIAGNOSTIC CRITERIA FOR CYTOMEGALOVIRUS MONONUCLEOSIS<sup>[8]</sup>:**

Clinical and hematological criteria [all of the following]	Virological criteria [All of the following]
1. Febrile illness	1. No evidence of other causes of infectious mononucleosis such as HIV or primary EBV infection
2. Immunocompetent with age >18 years	2. Detection of CMV by CMV pp65 antigen or CMV PCR assay in blood
3. Any one of the following peripheral blood smear findings: a) Lymphocytosis with >50% of total white cell count b) >5 atypical lymphocytes per 100 lymphocytes in blood	3. Detection of CMV specific IgM antibody in serum

Cytomegalovirus IgM antibodies can be associated with both primary and non primary CMV infection thus differentiating primary CMV infection requires detection of low CMV IgG avidity [6]. Most patients with cytomegalovirus mononucleosis improve without any specific antiviral treatment [1].

**DECLARATION:**

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