Difference Between CMV and EBV

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Key Difference – CMV vs EBV

Herpes virus family is a group of viruses which have the ability to infect humans and animals. There are eight members of the herpes virus family namely herpes I to VIII. Cytomegalovirus (CMV) and Epstein-Barr virus (EBV) are two viruses of the Herpes family; they can be infectious upon transfer from one person to another via contact. **EBV is the direct causative agent of the disease mononucleosis whereas CMV occasionally becomes the causative agent of mononucleosis which is commonly identified among youth, adolescents and children.** This is the key difference between CMV and EBV.

What is CMV?

CMV is a member of the Herpes VI family and has a double stranded linear non-segmented DNA molecule. It is icosahedral in shape although it can have a pleomorphic nature with regard to its shape. It is an enveloped virus. CMV can be transferred through touch, physical contact, body fluids such as saliva and urine and through organ transplantation. In children and infants, it can also be transmitted during nappy changes. CMV is also transmitted during the pregnancy period of a woman; here, the virus can be transmitted to the unborn.

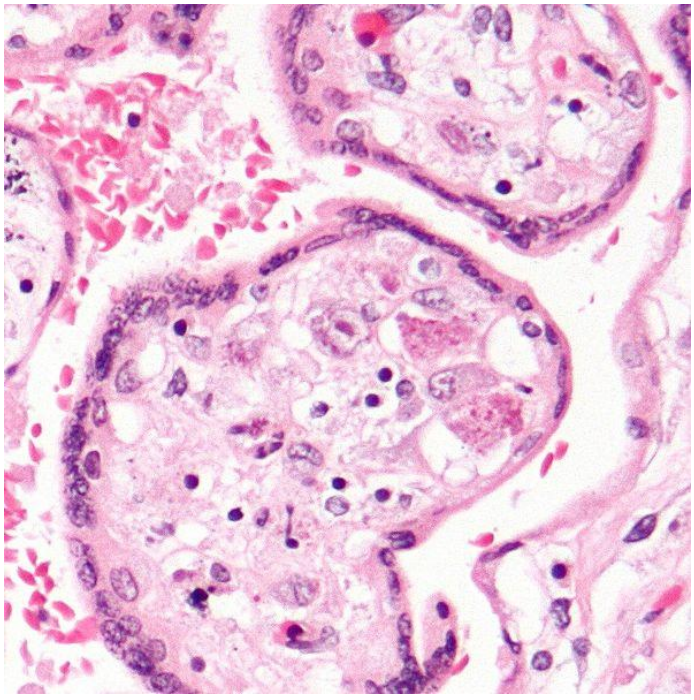

Figure 01: CMV

The symptoms of CMV infection are not visible at its early stage, but manifestations begin when the person ages. CMV is mostly asymptomatic and possesses general symptoms similar to common flu. CMV is also seen as a secondary infection in people suffering from infections such as HIV. During these circumstances, the patients are treated with anti-viral drugs to control the condition.

What is EBV?

EBV is a member of the Herpes IV category and has a double stranded linear molecule and is icosahedral in shape. EBV is an enveloped virus with a lot of glycoproteins attached to the envelope, which act as recognition sites of the virus. EBV is the direct causative agent of Mononucleosis which is commonly referred to as the kissing disease since this virus is commonly transmitted via kissing. Other modes such as physical contact, body fluids, and organ transplants can also transmit this virus.

The most common clinical manifestations of Mononucleosis are high fever, sore throat, swollen lymph nodes, and tonsils. Mononucleosis caused by EBV can cause inflammation of the spleen, resulting in severe pain in the upper left part of the stomach. Mononucleosis caused by EBV normally remains unidentified, and the infection is cured after a few weeks, although the virus remains in the system and can reoccur after a particular period, especially when the person is immune-compromised.

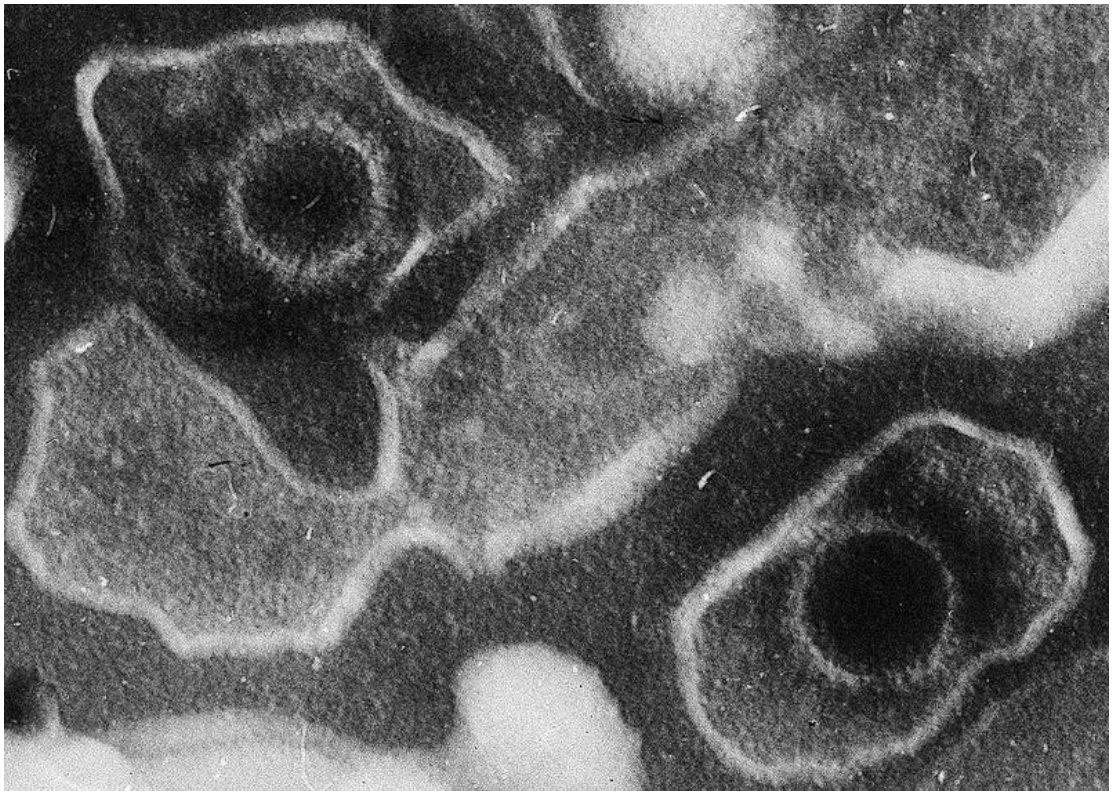

Figure 02: Epstein-Barr virus

What are the similarities between CMV and EBV?

- Both CMV and EBV belong to the family of Herpes virus.
- Both are icosahedral in shape.
- Both viruses contain double stranded linear DNA.
- Both are enveloped viruses.
- Diseases which are caused by both viruses are transmitted via physical contact, sexual contact, body fluids, consumer materials and organ transplants.
- They are mostly asymptomatic and can show symptoms of a flu condition.

What are the differences between CMV and EBV?

CMV vs EBV	
CMV or Human Cytomegalovirus is a type of Herpes virus transmitted to humans.	EBV or Human Epstein-Barr virus is a type of virus transmitted to humans and is the causative agent of Mononucleosis.
Herpes Family	

CMV belongs to Herpes VI family.	EBV belongs to Herpes IV family.
Shape	
CMV is mostly icosahedral but can attain pleomorphic shapes ranging from spherical to circular.	EBV is icosahedral.
Presence of Glycoproteins	
Few recognition glycoproteins are present in CMV.	A high number of glycoproteins are present in EBV.
Diseases Involved	
CMV is not involved in the manifestation of Mononucleosis.	EBV is the direct causative agent of Mononucleosis.

Summary – CMV vs EBV

Viral infections are a threat to the field of medicine since they evolve fast and there is no targeted treatment procedure for a viral infection. Both CMV and EBV are very closely related and are similar in their action mechanisms and epidemiologies since the transmittance of the virus, and the clinical manifestations of the virus are similar. EBV gives rise to Mononucleosis whereas CMV does not. This is the main difference between CMV and EBV. Both infections can also remain unexpressed and asymptomatic unless the person who is infected is immune-compromised.

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1. “CMV placentitis2 mini” By Nephron – Own work (CC BY-SA 3.0) via Commons Wikimedia
2. “Epstein Barr Virus virions EM 10.1371 journal.pbio.0030430.g001-L” By Liza Gross – (2005) Virus Proteins Prevent Cell Suicide Long Enough to Establish Latent Infection. PLoS Biol 3(12): e430 DOI: 10.1371/journal.pbio.0030430 (CC BY 2.5) via Commons Wikimedia

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