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Infectious Mononucleosis

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Infectious Mononucleosis (otherwise known as “mono”) is caused by a herpes simplex virus. The two main herpes viruses responsible for infectious mononucleosis are EBV/HHV-4 and CMV/HHV-5. HHV-4 is the Epstein-Barr virus (EBV) and is responsible for about 90% of cases. The other type, HHV-5, is the Cytomegalovirus (CMV).

Infectious Mononucleosis is characterized by a classic triad of symptoms that includes fever, sore throat, and lymphadenopathy/splenomegaly. Lymphadenopathy is swollen lymph nodes. The teenage years are a common age of onset. The main mode of transmission for infectious mononucleosis is oral secretions which is why it is sometimes referred to as the “kissing disease.”

Mononucleosis affects two main cells: the epithelial cells of the oral pharynx and B-cells. EBV infects epithelial cells of the upper respiratory tract first. This can lead to a sore throat as inflammation in the respiratory tract occurs. As the epithelial cells become infected and release more virus particles, the virus begins to enter B-cells in nearby lymph tissue. EBV can remain latent in a person’s B-cells for a lifetime. EBV infection of B-cells triggers B-cell activation and division. Many of the B-cells that are activated will begin to churn out antibodies that are not even targeting EBV specific antigens. Some of these antibodies that are triggered have been shown to bind the red blood cells of sheep, horses, oxen, and goats. This ability of these antibodies to bind to red blood cells of a different species gives them the name heterophile antibodies. The antibodies are largely the IgM type and cause agglutination of these animal red blood cells. Generally, a person produces very few **heterophile antibodies**. However, after an EBV infection, the numbers of heterophile antibodies found in a person’s serum increases a lot. A clinical test called the monospot test has been created that takes advantage of the presence of heterophile antibodies in individuals with infectious mononucleosis. The monospot test is performed when a person’s serum is placed on a matrix containing horse, sheep or goat red blood cells. If agglutination of the red blood cells occurs, the test is positive. A positive monospot test can suggest an EBV infection. It should be noted however, that not everyone who has infectious mononucleosis will have a positive monospot test. In cases where the monospot test is negative, but the symptoms suggest an EBV infection, further testing for specific antibodies against EBV antigens can be done. It should also be noted that young children frequently do not have a positive monospot test even when they have an EBV infection. It is not well known why this difference exists.

An EBV infection can also cause what are called “reactive lymphocytes” which are cytotoxic (CD8+) cells that become very big with a large and irregular nucleus. These large lymphocytes can be seen on a blood smear and help validate the diagnosis of an EBV infection. The specific reactive lymphocytes found with EBV are nicknamed “Downey” cells.

The clinical course of infectious mononucleosis is insidious, which means it comes on slowly and with no obvious symptoms at first. The incubation period can go on for a long time (up to 3 months) and people can be contagious when they don’t even yet know they are infected. The prodromal period of time where the virus manifests itself after incubation and the symptoms are most severe is about 2-3 weeks. However, symptoms at some level can last several months (especially symptoms of fatigue and low energy).

Treatment for infectious mononucleosis is supportive and addresses the symptoms. Bedrest and analgesics such as acetaminophen and NSAIDs are used to relieve fever, headaches and sore throat. Swollen lymph nodes and splenomegaly are often found with infectious mononucleosis because of the inflammation that arises from infected lymphocytes which are found in abundance in the lymph tissues including the spleen. The inflamed spleen should be protected from rupture and it is generally recommended that patients avoid any contact sports for a minimum of 3 weeks after a diagnosis is made.



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