

Epstein barr virus



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The paper "What Infects the Epstein Barr Virus and How Can It Be Detected?" is a potent example of a term paper on health sciences & medicine. Epstein Barr virus is a DNA enveloped virus which is associated with many pathological conditions including infectious mononucleosis, lymphomas of the B-cells including Burkitt's lymphoma, a malignant cancer of the nasopharynx as well as hairy leukoplakia (Levinson 2008 & Kumar et al 2005). This virus has been given this name after the discoverers of this virus who were Epstein and Barr. They separated this virus from a case of Burkitt lymphoma and hence this virus is now referred to as Epstein Barr virus (Rao 2004).

Epstein Barr virus is a virus which is known to be found all around the world. The disease is basically passed on through secretions of the oral and the nasal cavity. There are different ages of infection in the developing and developed nations. Approximately 90 percent of children up till the age of 6 years are infected with the disease in the developing nations. On the other hand, in the developed nations the infectivity is mainly seen in adolescents. When the infection occurs in young children, they do not report with any pathology and this is rather beneficial because it leads to immunization against infectious mononucleosis. On the other hand in adolescents, almost 50 percent of the cases report with this pathology. In the United States of America, infectious mononucleosis is reported in 100, 000 patients every year (Brooks et al 2004).

The structure of the Epstein Barr virus is very closely related to the other DNA enveloped herpes viruses. The major difference lies in the antigens. Viral capsid antigen is the most significant amongst the antigens on the virus and it is this antigen which is of significance in diagnosis. Other antigens

related to this virus include early antigens (EA), nuclear antigen (EBNA), viral membrane antigen and the lymphocyte determined membrane antigen. The main target of this virus is the lymphocytes in the body and in particular the B lymphocytes. If the disease is in a latent stage, the presence of the virus DNA is seen in the cytoplasm of the B lymphocytes which have been invaded by the virus (Levinson 2008).

The virus initially affects the oropharynx and replicates in the cells of the salivary glands and the pharynx. It is from here that the infection spreads into the bloodstream and then spreads to other parts of the body. A person who has once been infected with the virus has small quantities of the virus in a latent form in the B lymphocytes throughout their life. Infectious mononucleosis is the most common disease resulting from this virus and leads to a multiplication of lymphocytes. Antibodies are formed against these lymphocytes in the course of the reaction. The latent form of the condition can result in no significant harm to the person but it can be reactivated in a person whose immunity gets suppressed and thus lead to pathologies (Brooks et al 2004).

The Epstein Barr virus has a very strong association with certain neoplasms in particular races. The African children are susceptible to develop Burkitt's lymphoma due to the virus, the Chinese people can develop lymphomas of the B-Cell and nasopharyngeal carcinoma and it has a high association with carcinoma of the thymus in the people residing in the United States (Levinson 2008).

The Epstein Barr virus can be detected by using nucleic acid hybridization. Techniques to check for the antibodies against the virus include ELISA, immunoblot assays and indirect immunofluorescence tests. The presence of

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different antibodies indicates different factors. IgG antibodies against the viral capsid antigen indicate the fact that there is no active infection present and that the patient was previously infected with the virus. It also indicates the development of immunity. The IgM antibody suggests the fact that there is an ongoing infection. Antibodies against the early antigen are supportive of present infection and they mostly occur in Burkitt's lymphoma and the cancer of the nasopharynx. Antibodies against EBNA are not very common and they also indicate current infection (Brooks et al 2004 & Levinson 2008).

Epstein Barr virus is a virus against which no vaccine has been developed and hence there are no proper means of prevention against the virus. Another important fact is that there is also no proper antiviral medication against this virus. Acyclovir is administered in the very serious pathologies resulting due to this virus (Levinson 2008 & Volk 1996). Acyclovir does not have any proper effect against the infectious mononucleosis. It is only seen that this drug basically leads to decreasing the spread of the virus from the oropharynx but this is also limited till the period the drug is given and this activity subsides after discontinuation of the drug (Brooks et al 2004).