



## Insights into the Pathogenesis of Hodgkin's Lymphoma: The Role of EBV

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### Description

More than 90% of people on the planet are infected with the human herpes virus 4 (HHV-4), often known as the Epstein-Barr-Virus (EBV). It is a double-stranded DNA virus that is a member of the Herpesvirus family. Infectious mononucleosis, a typical viral disease that affects adolescents and young adults, is caused by EBV. EBV is also linked to various cancers, including gastric cancer, nasopharyngeal carcinoma, Hodgkin's lymphoma, and Burkitt's lymphoma. The histology of conditions linked to EBV are discussed in this study.

#### Infectious mononucleosis

Infectious Mononucleosis (IM) is a self-limiting illness that typically affects adolescents and young adults. The disease is characterized by fever, sore throat, lymphadenopathy, and fatigue. IM is caused by primary infection with EBV, and the virus is transmitted through saliva. The histopathological features of IM include the presence of atypical lymphocytes in the peripheral blood and lymphoid tissues. Atypical lymphocytes are large, reactive lymphocytes that have abundant cytoplasm, irregular nuclei, and prominent nucleoli. These cells are also known as Downey cells or virocytes. In addition, there is lymphoid hyperplasia with reactive germinal centres in lymphoid tissues, especially in the tonsils and adenoids.

#### Burkitt's lymphoma

Burkitt's Lymphoma (BL) is a highly aggressive B-cell lymphoma that is associated with EBV infection in endemic regions of Africa. The disease is characterized by a rapidly growing mass in the abdomen, jaw, or other extranodal sites. The histopathological features of BL include a monomorphic population of medium-sized lymphoid cells with high mitotic activity and a starry sky appearance. The lymphoid cells of BL have a characteristic chromosomal translocation t(8;14)(q24;q32) that leads to the activation of the

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#### Hodgkin's lymphoma

Hodgkin's Lymphoma (HL) is a B-cell lymphoma that is characterized by the presence of Reed-Sternberg cells (RS cells) in the lymph node biopsy. RS cells are large, binucleated or multinucleated cells with prominent nucleoli and abundant cytoplasm. The histopathological features of HL include a mixed cellular infiltrate with a background of lymphocytes, plasma cells, and histiocytes. The RS cells are surrounded by a halo of reactive T-cells, which form the so-called "rosettes." EBV infection is associated with a subset of HL cases, particularly those with nodular sclerosis subtype. In EBV-associated HL, the RS cells express the EBV-encoded Latent Membrane Protein 1 (LMP-1), which is a potent activator of NF-kappaB signaling pathway.

#### Nasopharyngeal carcinoma

An uncommon epithelial tumour that develops from the nasopharyngeal epithelium is known as Nasopharyngeal Carcinoma (NPC). Southeast Asia has a high prevalence of NPC, especially in Southern China, where it is the most frequent cancer among men. Squamous cell carcinoma with a noticeable lymphoid infiltration is one of the histological characteristics of NPC. The epithelial marker cytokeratin is expressed by the tumour cells, which have the recognisable look of "keratin pearls". Reactive lymphocytes, plasma cells, and histiocytes make up the lymphoid infiltration.

In conclusion, Lymphomas are a heterogeneous group of malignancies driven by different cell-cycle regulatory proteins, epigenetic modifications and aberrant signal transduction pathways. NHLs are divided primarily into two main categories based on their rate of growth: aggressive and indolent. Prognostic features have been useful in determining the potential outcome of treatment of patients with NHL.