



## **WHO WERE EPSTEIN AND BARR?**

Drs. Epstein and Barr were British virologists who, in 1964, found that a virus caused a cancer known as Burkitt's lymphoma. Dr. Denis Burkitt was a British medical officer who remained in Africa after World War II to treat the indigenous population. He discovered that some African children developed a cancer of their lymph glands, and this cancer was named after him (i.e., Burkitt's Lymphoma). Dr. Burkitt suspected that some infection caused the cancer and teamed up with Drs. Epstein and Barr to investigate. Drs. Epstein and Barr found a herpes type virus in the cancer, and it became known as the Epstein-Barr Virus.

**Relevance to Adhesive Arachnoiditis:** The mechanism by which EBV may cause AA was discovered shortly after the initial, groundbreaking discovery that a virus could cause cancer. Drs. Epstein and Barr began studying Hodgkins Disease, a type of lymph node cancer. They determined that the cause of the cancer was the result of viral reactivation. EBV is normally an asymptomatic, harmless parasite in human lymphocytes. Under some circumstances, however, it can reactivate and travel in the bloodstream to infiltrate and colonize tissues. The infiltration and colonization in tissues can cause cancer or destroy tissue. This mechanism explains how EBV can cause or propagate AA by infiltrating and colonizing the arachnoid membrane and cauda equina nerve roots.

**EBV and Cancer Today:** EBV causes 2 to 3% of the world's cancers. EBV causes lymphomas, gastric, and nasopharyngeal cancers.

**EBV and Autoimmunity:** The concept of autoimmunity (i.e., a biologic element in the body attacks and destroys normal cells) first emerged in the 1960's at about the same time that Drs. Epstein and Barr discovered that a virus could cause cancer. In their writings, Drs. Epstein and Barr suggested EBV caused some indirect pathologic effects. This belief was later determined to be autoimmunity. Recent studies indicate that reactivated EBV may produce autoimmunity by differing mechanisms (i.e., Gene activation, autoantibodies, cellular mimicry). It is our belief that EBV autoimmunity is often a cause of ongoing inflammation in AA.

**Summary:** The EBV virus is named after the two virologists who discovered that the virus caused some cancers. These researchers determined that the virus could reactivate from its parasitic state and infiltrate and colonize tissues. Later research found that EBV reactivation may produce autoimmunity which attacks and destroys normal tissues. Our studies in persons with AA indicate that many, if not the majority, experience colonization and/or autoimmunity from reactivated EBV.

## **References**

1. Epstein, Barr, Achang. Virus particles in cultured lymphocytes from Burkitt's lymphoma. *Lancet* 1964;1:702-703.
2. Zhang, et al. Epstein Barr virus and neurologic disease. *Front Mol Biochem* 2022;10:1-34.