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Title

The oncogenic role of Epstein-Barr Virus Infection in the risk of breast cancer

Priority 1 (Research Category)

Cancer research (not screening)

Presenters

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Abstract

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Abstract

Context: Breast cancer is a rising concern and the world's most prevalent cancer. It affected 2.3 million people, with 685,000 related deaths in 2020. Epstein-Barr virus (EBV) has been hypothesized to increase the risk of breast cancer by activating the HER2/HER3 signaling cascades, creating a state of prolonged immune stimulation, or stimulating the pro-inflammatory cytokines and aromatase activity. Almost 90-95% of the world population is infected with EBV but its association with breast cancer has not been clearly elucidated.

Objective: To better understand the association between the EBV infection and the risk of breast cancer.

Study Design and Analysis: A systematic literature search following Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines was conducted. Studies published in English language from 2012 through May 2022, worldwide were included. Out of 688 articles identified, only 24 studies were eligible to include in the review.

Databases: PubMed, ScienceDirect, Cochrane, EBSCOhost, JSTOR, and Scopus

Population studied: Adult population worldwide

Intervention/Instrument: N/A

Outcome Measures: Percentage of adult women diagnosed with breast cancer and prior infected with EBV.

Results: A total of 24 case-control studies including 1.989 women with breast cancer and 1.034 control cases were analyzed. EBV infection was detected among 27.9 % of women with breast cancer cases

versus 8.02% found in normal and benign breast tissue controls. EBV infection was mainly associated with invasive breast cancer (68.1%). The presence of EBV infection was detected using PCR and, was found to be highest among women with breast cancer in Sudan (64.1%) and lowest among women with breast cancer in Mexico (4.6%).

Conclusions: EBV infection might be related to an increase in breast cancer risk among women worldwide and geographical distribution variances are observed. Additional studies are required to better understand Epstein Barr's viral oncogenic effects on the pathogenesis of breast cancer and to improve prevention and treatment protocols for breast cancer.