Detection of Epstein-Barr Virus in Invasive Breast Cancers

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Background
The Epstein-Barr virus (EBV) has been known to play a role in the development of human malignancies, especially tumors of lymphoid or epithelial origin. The latest addition to the list is breast cancer. This French study reported by M Bonnet, et al. provides data to support the association between EBV and breast cancer.

Methods
One hundred consecutive biopsy specimens of primary invasive breast carcinomas, 30 normal specimens adjacent to breast tumors, and five lymph nodes with metastases were collected. Three techniques were utilized to detect the presence of EBV. These included polymerase chain reaction (PCR) assays, Southern blotting, and immunohistochemistry with monoclonal antibodies against the EBV nuclear protein EBNA-1.

Results
- EBV genome was detected in 51% of the tumors and in 10% of the healthy tissue adjacent to tumor (p<0.001) suggesting that EBV is mainly restricted to the tumor.
- The EBV positivity was seen more frequently associated with histologic grade, with 66%, 44%, and 27% of grade III, II, and I, respectively (p=0.03).
- The EBV-positive samples were also more frequently detected in hormone receptor negative tumors (79%) than in tumors with positive receptors (45%) (p=0.01).

Discussion
The significant difference in the detection of EBV DNA between malignant and adjacent healthy tissue strongly suggests that EBV is mainly restricted to the breast cancer, more so in high histologic subtypes and receptor negative tumors. More studies are required to establish the underlying mechanisms.