The antibody 2B4 directed against the Epstein-Barr virus (EBV)-encoded nuclear antigen 1 (EBNA1) detects MAGE-4: implications for studies on the EBV association of human cancers.

Abstract:
We have previously developed two monoclonal antibodies against the Epstein-Barr Virus (EBV) nuclear antigen 1 (EBNA1), designated 1H4 and 2B4. Both detect EBNA1 by in situ staining in established EBV-positive tumours, e.g. Hodgkin’s lymphoma and nasopharyngeal carcinoma. An association of EBV with other tumours, notably breast carcinomas, has been reported but remains controversial. Using the antibody 2B4, a nuclear protein has been detected in breast carcinomas that were EBV-negative by other methods, suggesting cross-reactivity with a cellular protein. Furthermore, an association of EBV with various other carcinomas has been reported on the basis of 2B4 immunohistochemistry. Here we show that 2B4 also binds to MAGE-4, a cancer testis antigen expressed in a variety of tumour cells, including breast carcinoma, seminoma and EBV-negative cases of Hodgkin’s lymphoma. We conclude that the 2B4 antibody is not suitable for the detection of EBV infection but that additional techniques, particularly in situ hybridization for the detection of the EBV-encoded RNAs (EBERs), should be employed to confirm the presence of EBV. Our results add to the evidence indicating that breast cancer is not an EBV-associated disease.