

Meeting abstract

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Analysis of the presence of cutaneous and mucosal papillomavirus types in ductal lavage fluid, milk and colostrum to evaluate its role in breast carcinogenesis

M Cazzaniga¹, T Gheit², C Casadio¹, N Khan³, D Macis¹, F Valenti¹, MJ Miller¹, BS Sylla², S Akiba³, B Bonanni¹, A Decensi⁴, U Veronesi¹ and M Tommasino^{*2}

Address: ¹European Institute of Oncology, Milan, Italy, ²International Agency for Research on Cancer, Lyon, France, ³Kagoshima University Graduate School of Medical and Dental Sciences, Kagoshima, Japan and ⁴Ospedali Galliera, Genova, Italy

Email: M Tommasino* - tommasino@iarc.fr

* Corresponding author

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Background

The family of the epithelio-tropic human papillomavirus (HPV) comprises approximately 100 different types that have been subgrouped in different genera according to their genomic DNA sequence. In addition, the HPVs can be subdivided in mucosal and cutaneous based on their tissue tropism. Members of the genus alpha, referred to as mucosal high-risk HPV types, have been clearly linked to cervical cancer. Emerging lines of evidence indicate that another group of HPVs belonging to the genus beta may be involved in human carcinogenesis, i.e. non-melanoma skin cancer (NMSC). Several independent studies have suggested the involvement of mucosal HPV types in the aetiology of human breast cancer, while others have reported opposite findings. Here, we have analyzed the prevalence of alpha mucosal and beta cutaneous HPV types in 115 mammary fluids obtained by ductal lavages from 90 women at elevated risk for breast cancer as determined by the presence of viral DNA. We also analyzed a series of 25 colostrum and milk samples from women at average risk.

Methods

Different highly sensitive and specific polymerase chain reaction (PCR)-based protocols were used to detect DNA

from mucosal and cutaneous HPV in ductal lavages (DL) obtained before (n = 70) or after removal of the superficial layer of the nipple epidermis by tape (n = 45), as well as from colostrum (n = 10) and milk (n = 25).

Results

Ten of the 70 DLs analyzed (14%) contained a single or multiple beta HPV type. Together, these 10 specimens contained 32 beta HPV DNAs. In contrast, DNA from mucosal high-risk HPV types was detected in only one sample (1/70). From the 45 DL fluids collected after removal of the superficial layers of the nipple epidermis, the DNA of only two beta HPV types was found in two samples (4%). In contrast, the epidermis of the nipple removed by the tape was strongly positive for beta cutaneous HPV types (≈90%). All 115 DLs were negative for the mucosal low-risk HPV types 6 and 11. Finally, HPV positivity was low in colostrum and milk.

Conclusion

Our data show that DNA of alpha mucosa and beta cutaneous HPV types are rarely present in the breast fluids of high-risk women, and suggest that a direct role of HPV in breast carcinogenesis is unlikely. Ongoing studies are

focused on the determination of other infectious agents in DL, e.g. EMV and/or MMTV.

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