

Region-Wise Distribution of High-Risk Human Papillomavirus Types in Squamous Cell Carcinomas of the Cervix in India

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[International Journal of Gynecological Cancer. 20\(6\):1046-1051,2010](#)

Abstract:

Hypothesis: Assessment of the prevalence and type distribution of human papillomavirus (HPV) in squamous cell carcinomas (SCC) of the cervix across India was undertaken to estimate the impact of available prophylactic HPV-L1 vaccines in the country and to find out additional types that might be needed to be incorporated in second-generation vaccines.

Methods: High-risk (HR) HPVs were genotyped from 667 histopathologically confirmed cases of SCC from 6 different centers representing 4 regions across India: Advanced Centre for Treatment, Research and Education in Cancer, Mumbai; All India Institute of Medical Sciences, New Delhi; Cancer Foundation of India, Kolkata; Christian Medical College, Vellore; Kidwai Memorial Institute of Oncology, Bangalore; and Regional Cancer Center, Thiruvananthapuram. Human papillomaviruses in tumor biopsies were analyzed by Xcytonsreen HPV based on PGMY09/11 multiplex polymerase chain reaction and reverse dot blot assay.

Results: Overall viral prevalence across India was not different; 92.1% of 667 cases harbored HPV; 8% were negative. Infection with single HR type was seen in 86.8%; predominant types being HPV-16 followed by HPV-18, -45, -73, -31, -56, -52, -58, -59, -33, -68, -51, -35, -26, and -39. Human papillomavirus types 16/18-positive fraction formed 79.6%; other types comprised 12.4%.

Conclusions: Prophylactic HPV-16/18-L1 vaccines would provide greater than 75% protection against SCC in India. Ranking and frequencies of non-16/18 types were different from earlier reports. Hence, considering the possibility of promotion of persistence of nonvaccine types in the vaccinees due to original antigenic sin and the lack of organized screening programs in India, a broad-based vaccine approach would be appropriate.