

# INVESTIGATION OF HUMAN PAPILLOMAVIRUS DNA IN HEAD AND NECK EPITHELIAL TUMOURS

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The human papillomavirus DNA status (prevalence, types, physical state and copy number) of head and neck cancers (n = 33), recurrent respiratory papillomatosis cases (n = 14), and mixed lesions initially harbouring papilloma and dysplasia and showing malignant degeneration at follow-up (n = 5) was examined in fresh-frozen tissue biopsies by polymerase chain reaction and Southern blot hybridization techniques.

Forty-five percents of cancers were positive for HPV DNA. Both low-risk (6 and 11) and high-risk (16) types were detected, regardless of cancer site. As a consequence of low copy number we failed to determine the physical state of HPV DNA except one HPV 6 positive oropharyngeal cancer, in which the viral genome was integrated and the disruption of circular DNA affected the E2 ORF. There were no relationships between the HPV positivity and the clinico-pathological features or prognoses of patients. According to these results, the etiological role of HPVs in head and neck carcinogenesis remains equivocal.

Each patient in the RRP group harboured either HPV 6 or 11 DNA. The presence of a certain low-risk HPV type is consistently demonstrable in serial samples deriving from a number of patients. HPV 11 positivity tends to predict a worse prognosis (slightly more frequent relapses, necessity of tracheotomy). In contrast to cancers, the viral genome exists in episomal physical state and in substantially higher copy numbers, with fluctuations of the latter in several orders of magnitude.

During the malignant degeneration of mixed lesions initially comprising of papilloma and dysplasia - by performing biopsy from the precancerous mixed lesion or the already invasive cancer - the majority of tissue samples were negative for HPV DNA. Two samples harboured HPV 16 DNA, presumably in very low copy numbers. Therefore the HPV status of this group is similar to those diagnosed initially as invasive cancers.

During the intralesional cidofovir therapy of a 14-year-old child with RRP, the initial phase of therapy with injections given at shorter intervals the complete remission of lesions was accompanied by the substantial decrease of HPV DNA copy number. In the maintenance phase with injections given at longer intervals, disease recurred at a controlled rate and HPV DNA copy number showed fluctuations in several orders of magnitude again, similarly to the pretreatment period. In this maintenance phase the long-term effects of cidofovir other than the inhibition of DNA replication and the natural history of RRP can account for the controlled disease.

**Key words:** human papillomavirus, DNA, head and neck, cancer, papilloma, cidofovir

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