

HPV, periodontitis work in tandem to increase risk of tongue cancer

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Persons with periodontitis who also are infected with human papillomavirus (HPV) are at increased risk of developing tongue cancer, new research conducted at the University at Buffalo School of Dental Medicine has shown.

Periodontitis is a chronic inflammatory disease that destroys connective tissue and bone supporting the teeth. It has been associated with various systemic diseases, including diabetes and heart disease.

Researchers from UB and Roswell Park Cancer Institute published the first study showing an association between long-standing periodontitis and risk of tongue cancer in the May 2007 issue of *Archives of Otolaryngology - Head and Neck Surgery*. Studies conducted elsewhere have found that HPV is an independent risk factor for a subset of head and neck cancers.

The UB researchers now have shown that the two infections appear to work in tandem to boost the chances of developing tongue cancer.

Mine Tezal, D.D.S., Ph.D., assistant professor in the Department of Oral Diagnostic Sciences, UB dental school, and research scientist at Roswell Park Cancer Institute, presented results of this research today (April 4, 2008) at the 2008 American Association of Dental research meeting in Dallas, Texas.

Evidence of periodontitis-HPV synergy has important practical

implications,” said Tezal, “because there is a safe treatment for periodontitis, but no treatment for HPV infection. If these results are confirmed by other studies, this has a tremendous relevance in predicting and intervening in the initiation and prognosis of HPV-related diseases, including head and neck cancers.”

The study involved 30 patients newly diagnosed with squamous cell carcinoma on the base of the tongue between 1999 and 2005 at Roswell Park Cancer Institute for whom data was available on both periodontitis and tumor HPV status. Cumulative history of periodontitis was determined by assessing the loss of alveolar bone, the bones that underlie and support the teeth, via X-ray.

Tumor status was identified from paraffin-embedded tumor samples analyzed by polymerase chain reaction. Analysis concentrated on the presence of tumors containing the DNA of two of the most common types of HPV virus associated with oropharyngeal cancers, HPV-16 and HPV- 18.

Results showed that 63 percent, or 19 out of 30 patients, had tumors that were positive for HPV-16 DNA; none of the tumor samples were found to contain HPV-18 DNA. In addition, 90 percent of patients with tumors positive for HPV had periodontitis, and 79 percent of patients whose tumors showed no presence of HPV did not have periodontitis.

“HPV infection is a necessary, but not sufficient, cause of head and neck cancer,” said Tezal. “Although the majority of the population is infected with HPV at least once in their lives, most infections are cleared rapidly by the immune system and do not result in pathology.

“Persistence of HPV infection is the strongest risk factor for carcinogenesis,” she said. “Thus, the identification of factors that influence the persistence of HPV infection is critical to facilitate efforts

to prevent head and neck cancers. This study implicates that chronic inflammation and co-infection with oral bacteria may be significant factors in the natural history of HPV infection.”

Source: University at Buffalo

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