

Mouth rinse could help predict recurrence of HPV-related oropharyngeal cancers

July 30 2015

Oropharyngeal cancer patients who were found to have detectable traces of human papillomavirus type 16 (HPV16) in their saliva following cancer treatment are at an increased risk for recurrence, a study led by researchers at the Johns Hopkins Bloomberg School of Public Health has found.

The oropharynx is the area of the upper throat that includes the back of the tongue, the soft palate, the tonsils and the walls of the throat. Oropharyngeal cancer accounts for 2.8 percent of new cancers in the United States; it is often treated successfully with surgery.

In a small study, seven percent (five of 67) of oropharyngeal cancer patients who had HPV16 DNA in their oral rinse at the time of diagnosis were later found to still have traces of HPV16 DNA in their oral rinse following treatment. Of these, all developed a local recurrence of the cancer. The finding, believed to be the first of its kind, could lead to new follow-up protocols for oropharyngeal cancer patients, the researchers say.

The study is published July 30 in the journal *JAMA Oncology*.

"It's a very small number so we have to be somewhat cautious," says Gypsyamber D'Souza, PhD, an associate professor in the Department of Epidemiology at the Johns Hopkins Bloomberg School of Public Health and a member of the Sidney Kimmel Comprehensive Cancer Center. "The fact that all of the patients with persistent HPV16 DNA in their

rinses after treatment later had recurrence meant that this may have the potential to become an effective prognostic tool."

For their study, researchers tracked 124 patients who had been diagnosed with oropharyngeal cancer, collecting oral rinses from patients at the time of diagnosis and again following treatment, at nine, 12, 18 and 24 months after diagnosis. Patients were asked to rinse and gargle with Scope mouthwash. Of the 124 patients, slightly over half had oral HPV16 DNA in their oral rinse at the time of their cancer diagnosis. Most patients no longer had HPV DNA detectable in their oral rinse after completing treatment, but some did.

The researchers do not know if the presence of HPV16 DNA in the post-treatment rinse means that the treatment did not completely eradicate the cancer in the first place or if the cancer returned. Either way, the finding suggests that a simple oral rinse could be a powerful diagnostic tool for the reappearance of this type of oral cancer.

HPV is associated with several types of cancer, most notably cervical and oral cancers. Incidence of HPV-associated cancers is increasing in the United States and the virus is responsible for the majority of oropharyngeal cancer here. HPV-positive oropharyngeal cancer generally has a better prognosis than HPV-negative cancer, but like other cancers, it can recur, potentially in up to 25 percent of cases.

HPV-related oropharyngeal cancer responds well to surgical treatment, but the success of surgical treatment decreases if the cancer is caught after it has spread to other parts of the body. The researchers hope that the detection of HPV DNA in oral rinses may enable earlier detection of recurrence and, therefore, better overall prognosis should the cancer recur.

Moreover, most of the recurrences observed in this study were localized

oropharyngeal cancer and not cancers that spread to other regions of the body. "Those that had HPV DNA detected in their mouth after treatment had a much higher risk of local recurrence," says D'Souza.

Researchers say that in this study disease recurrence was diagnosed roughly seven months after the detection of HPV16 DNA in the oral rinse. Presence of HPV16 DNA in oral rinses may allow for the detection of cancer recurrence before any other clinical signs or symptoms, which enables earlier treatment options.

"There was a lead time of several months between when we detected HPV16 DNA in the rinse and when they were diagnosed with recurrence," says D'Souza. "If we had known at the rinse time, it would have given a lead time for treatment."

D'Souza stresses that this type of testing is new. She also notes that this is a rare cancer, and that recurrence is even rarer still.

"It should be reassuring that most people who have been treated for HPV-related oropharyngeal cancers are cured and there is no HPV16 DNA detected in their mouths, but among those that did recur, this was an important potential predictor," she says.

More information: *JAMA Oncol.* Published online July 30, 2015. [DOI: 10.1001/jamaoncol.2015.2524](https://doi.org/10.1001/jamaoncol.2015.2524)

JAMA Oncol. Published online July 30, 2015. [DOI: 10.1001/jamaoncol.2015.2606](https://doi.org/10.1001/jamaoncol.2015.2606)

Provided by Johns Hopkins University Bloomberg School of Public Health

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