

# Tumor virus is best predictor of throat cancer survival

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The presence of human papilloma virus, the virus that causes cervical cancer, in tumors is the most important predictor of survival for people diagnosed with oropharyngeal cancer (cancer of the back of the mouth), according to a new study led by a researcher at the Ohio State University Comprehensive Cancer Center-Arthur G. James Cancer Hospital and Richard J. Solove Research Institute (OSUCCC-James).

Published online June 7 in the [New England Journal of Medicine](#) with a related editorial, this is the first study large enough to show that the presence of [human papilloma virus](#) (HPV) in tumors accounts for better response to therapy, rather than other favorable factors that may be present, such as young age and small tumors.

The second leading predictor of survival is lifetime smoking history, followed by [cancer](#) stage.

The findings suggest that the HPV status of a patient's tumor and their smoking history may be used in the future, in addition to cancer stage, to determine the aggressiveness of a patient's therapy.

"Previous studies indicated a relationship existed between the presence or absence of HPV in oropharyngeal tumors and patient survival, but they couldn't determine if other favorable factors present in these patients were responsible for their better outcome," says study leader Dr. Maura Gillison, a medical oncologist and head and neck cancer specialist at the OSUCCC-James.

"These findings close the door on these questions and will allow the field to move forward with clinical trials designed to determine how we should use molecular and behavioral factors to personalize therapy for patients."

Gillison emphasized that there is insufficient data at this time to indicate how a specific patient's [cancer therapy](#) should be tailored based on these factors.

Gillison and her colleagues analyzed the tumors and outcomes of 323 patients with stage III or IV oropharyngeal cancer who were part of a Radiation Therapy Oncology Group clinical trial. Of these patients, 206 had HPV-positive tumors and 117 had HPV-negative tumors.

At three years after treatment, 82 percent of patients with HPV-positive tumors were still alive, compared with 57 percent of patients with HPV-negative tumors. Rates of cancer relapse at three years for the groups were 43 percent and 74 percent, respectively.

The investigators determined that HPV presence in tumors accounted for most of the difference in therapy response and survival between patients with HPV-positive and HPV-negative tumors, while factors such as younger age, white race, better energy level, absence of anemia and smaller tumors were responsible for only about 10 percent of the difference.

Smoking history emerged as the second most important independent predictor of survival and cancer relapse for patients with oropharyngeal cancer. The risk of cancer relapse or death increased by one percent for each additional pack year of tobacco smoking (one pack year is equivalent to smoking one pack a day for a year).

The investigators found that at three-years, about 93 percent of patients

with HPV-positive tumors who were never or light- smokers were alive, as compared to about 70 percent of patients with HPV-positive tumors who were smokers and about 46 percent of patients with HPV-negative tumors who were smokers.

"The two risk factors that place an individual at risk for oropharyngeal cancer are also the most important factors determining patient survival. This is probably because these factors determine the genetic profile of these cancers and how they respond to treatment," Gillison says.

Gillison and her colleagues have since conducted a follow-up study to further investigate the influence of tobacco smoking on oropharyngeal cancer. She reported these findings June 7 at the 2010 annual meeting of American Society of Clinical Oncology.

Provided by Ohio State University Medical Center

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