

HPV infection may be behind rise in vocal-cord cancers among young nonsmokers

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Electron micrograph of a negatively stained human papilloma virus (HPV) which occurs in human warts. Credit: public domain

A remarkable recent increase in the diagnosis of vocal-cord cancer in young adults appears to be the result of infection with strains of human papilloma virus (HPV) that also cause cervical cancer and other malignancies. Investigators from Massachusetts General Hospital

(MGH) describe finding HPV infection in all tested samples of vocal-cord cancer from 10 patients diagnosed at age 30 or under, most of whom were non-smokers. Their report appears in a special supplement on innovations in laryngeal surgery that accompanies the March 2019 issue of *Annals of Otology, Rhinology and Laryngology*.

"Over the past 150 years, vocal-cord or glottic cancer has been almost exclusively a disease associated with smoking and almost entirely seen in [patients](#) over 40 years old," says Steven Zeitels, MD, director of the MGH Division of Laryngeal Surgery, senior author of the report. "Today nonsmokers are approaching 50 percent of glottic cancer patients, and it is common for them to be diagnosed under the age of 40. This epidemiologic transformation of vocal-cord cancer is a significant public health issue, due to the diagnostic confusion it can create."

The researchers note that the increase in vocal-cord cancer diagnosis appears to mimic an earlier increase in the diagnosis of throat cancer, which has been associated with infections by high-risk strains of HPV. After initially attributing incidents of vocal-cord cancer in nonsmokers, which they began to see about 15 years ago, to increased travel and exposure to [infectious diseases](#), Zeitels and his colleagues decided to investigate whether HPV infection might explain the diagnosis in younger nonsmokers.

To do so they examined the records of patients treated by Zeitels either from July 1990 to June 2004 at Massachusetts Eye and Ear Infirmary or between July 2004 and June 2018 at MGH. Of 353 patients treated for vocal-cord cancer during the entire period, none of the 112 treated from 1990 to mid-2004 were age 30 or younger. But 11 of the 241 patients treated from 2004 to 2018 were 30 or younger—3 were age 10 to 19—and only 3 of the 11 were smokers. Analysis of tissue samples from the tumors of 10 of the 11 younger patients revealed high-risk strains of HPV in all of them.

The authors note that these high-risk-HPV-associated vocal-cord cancers greatly resemble recurrent respiratory papillomatosis (RRP), a benign condition caused by common, low-risk strains of HPV. One of the 11 patients treated by Zeitels had previously been diagnosed at another center with vocal-cord cancer, and when it recurred after being surgically removed, she was misdiagnosed with RRP and treated with a medication that made the cancer worse, leading to the need for a partial laryngectomy.

"Benign RRP of the vocal cords has been a well-known HPV disease for more than a century, and it is very remarkable that there is now an HPV malignancy that looks so similar, creating diagnostic and therapeutic confusion," says Zeitels, the Eugene B. Casey Professor of Laryngeal Surgery at Harvard Medical School. "It should be noted that these HPV-associated vocal-cord carcinomas are not a malignant degeneration of the benign disease."

[Zeitels adds that HPV vocal-cord cancers are amenable to endoscopic treatment with the angiolytic KTP laser](#) that he developed. "Large-scale studies are now needed to determine the pace of the increase in glottic [cancer](#) among nonsmokers, the incidence of high-risk HPV in these cancers and changes in the age and genders of those affected," he says.

More information: Semirra Bayan et al, Glottic Carcinoma in Young Patients, *Annals of Otolaryngology, Rhinology & Laryngology* (2019). [DOI: 10.1177/0003489418818852](#)

Provided by Massachusetts General Hospital

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