

Researchers find some lung cancers linked to common virus

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A common virus known to cause cervical and head and neck cancers may also trigger some cases of lung cancer, according to new research presented by Fox Chase Cancer Center at the AACR Annual Meeting 2013 on Wednesday, April 10.

Examining tissue samples from [lung cancer patients](#), the researchers found that nearly 6% showed signs they may have been driven by a strain of [human papillomavirus](#) (HPV) known to cause cancer.

If HPV indeed plays a role in lung cancer in some patients, the next step is to better understand those tumors so they can be treated more effectively. "The ultimate goal," says study author Raneeh Mehra, MD, attending physician in [medical oncology](#) at Fox Chase, "is to determine if we can target our therapies to the specific characteristics of these tumors."

Studies from Asia have shown that [lung tumors](#) are frequently infected with HPV. The pattern makes sense, explains Mehra—the lungs are located very near the head and neck, which are known to be at risk of tumors upon exposure to some strains of HPV.

To investigate, she and her colleagues examined 36 [tissue samples](#) from people diagnosed with non-small cell lung cancer who had never smoked, part of the Fox Chase Cancer Center Biosample Repository. The reason they chose non-smokers, Mehra explains, is that smoking is a major cause of lung cancer—but in non-smokers, the explanation is

often less obvious.

The researchers found that 4 out of 36 samples had signs of infection from two strains of HPV known to cause cancer, 16 and 18. Looking more closely at the two samples infected by HPV 16, Mehra and her team saw signs the virus had integrated into the tumor's DNA—which is even more suggestive that the infection caused the tumor. They presented their findings at the annual meeting of the American Association for [Cancer Research](#).

Although this suggests that HPV drives lung cancer in less than 6% of non-smoker patients, making it a relatively rare occurrence, lung cancer is very common, Mehra notes—killing more than 1 million people every year. Approximately 10 percent of cases occur in non-smokers. "Given how many patients develop lung cancer, if even a small percentage of those tumors stem from HPV, that ends up being a large number of patients," she says.

It's not clear how HPV reaches the lung, she says; patients may simply breathe it in. And just because these patients have evidence of an HPV infection that does not necessarily mean the infection caused their tumors, Mehra cautions. "It could simply be a coincidence that they had both lung cancer and HPV," she notes. "But the presence of both simultaneously, and the integration of the virus into the [tumor](#)'s DNA, fuels the hypothesis that they are related."

Although the majority of people are exposed to HPV, these results are largely not cause for concern, assures Mehra. "In my practice, I treat many people with head and neck cancers who are infected with HPV. Some fear that they are 'contagious', and could somehow pass the cancer onto their families," she says. "Mostly, I reassure them—even though most people have been exposed to HPV, it's rare for someone to develop cancer as a result."

And people who have [lung cancer](#) but never smoked need not rush to their doctors to determine if they also have HPV, since doctors don't know yet if they should treat these tumors differently, or if the presence of the virus has any impact on prognosis. "These results are very preliminary and not a reason to run to your doctor to find out if you are infected, or panic if you are," she states.

As such, researchers need to investigate what factors drive some people to develop cancer after exposure to HPV, so they can better treat those types of tumors, says Mehra. "Hopefully, this research will fuel some discussion or further studies," she notes. "What we need is a better understanding of why does cancer develop in some [patients](#) and not in others."

Provided by Fox Chase Cancer Center

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