

Genetics of cervical cancer raise concern about antiviral therapy in some cases

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A new understanding of the genetic process that can lead to cervical cancer may help improve diagnosis of potentially dangerous lesions for some women, and also raises a warning flag about the use of anti-viral therapies in certain cases – suggesting they could actually trigger the cancer they are trying to cure.

The analysis provides a clearer picture of the chromosomal and [genetic changes](#) that take place as the [human papillomavirus](#) sometimes leads to chronic infection and, in less than 1 percent of cases, to [cervical cancer](#). It is the first to identify specific genes that are keys to this process.

Researchers say they want to emphasize, however, that the [HPV vaccine](#) commonly used by millions of women around the world is perfectly safe if done prior to infection with the virus. The concerns raised by this study relate only to viral therapies or possible use of a [therapeutic vaccine](#) after the virus has already been integrated into [human cells](#).

"It's been known for decades that only women with prior infection with HPV get cervical cancer," said Andrey Morgun, an assistant professor and a leader of the study in the OSU College of Pharmacy. "In about 90 percent of cases it's naturally eliminated, often without any symptoms. But in a small fraction of cases it can eventually lead to cancer, in ways that have not been fully understood."

These findings were published recently in *Nature Communications* by researchers from Oregon State University and a number of other

universities or agencies in the United States, Norway and Brazil. Collaborators at OSU included Natalia Shulzhenko, an assistant professor in the OSU College of Veterinary Medicine.

The study found that some pre-[cancerous lesions](#) can acquire a higher level of chromosomal imbalances in just a small number of cells. These new features appear to do two things at the same time – finally eliminate the lingering virus that may have been present for many years, and set the stage for the beginning of [invasive cancer](#).

So long as the virus is not eliminated, it helps to keep under control viral oncogenes that have been integrated into the patient's genome, researchers said.

"Some of what's taking place here was surprising," Morgun said. "But with continued work it should help us improve diagnosis and early monitoring, to tell which lesions may turn into cancer and which will not."

The study also concludes it could be dangerous to use antiviral treatments or therapeutic vaccines with women whose lesions already show signs of HPV integration.

This may help explain why use of the antiviral drug interferon had inconclusive results in the past, in some studies of its value in treating cervical cancer. Patients with existing HPV lesions may wish to discuss findings of this study with their physicians before starting such treatments, researchers said.

Other researchers using a similar analytical approach also found key driver genes in melanoma, according to the report. This approach may have value in identifying genomic changes that are relevant to a range of malignant tumors, scientists said.

Provided by Oregon State University

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