A Therapeutic HPV Vaccine Could Eliminate Precancerous Cervical Lesions

9 of 18 patients in a small study experienced regression of precancerous cell changes that can lead to cervical cancer.

January 29, 2025 By American Association for Cancer Research

A therapeutic vaccine targeting human papillomavirus type 16 (HPV16) induced regression in high-grade precancerous cervical lesions, according to the results from a Phase II clinical trial published in Clinical Cancer Research, a journal of the American Association for Cancer Research.

“Nearly all premalignant cervical lesions and cervical cancers are caused by HPV infection, with HPV16 implicated in the majority of cases,” said Refika Yigit, MD, principal investigator and oncological gynecologist at University Medical Centre Groningen in the Netherlands.

In those with Grade 3 cervical intraepithelial neoplasia (CIN3), cells are already on the path toward malignancy. If left untreated, approximately one-third of these cases progress to cervical cancer within 10 years and roughly half within 30 years, Yigit explained.

“The main purpose of our trial was to investigate whether our therapeutic vaccine—Vvax001—could offer a potential alternative treatment to the standard-of-care loop excision, which is frequently associated with complications,” Yigit added.

The Vvax001 vaccine is a modified version of the Semliki Forest virus that cannot replicate and produces the oncogenic E6 and E7 proteins that are expressed exclusively by HPV16-infected cells.

In the Phase II trial, 18 patients with HPV16-positive CIN3 received three doses of Vvax001 three weeks apart, and then were routinely monitored via colposcopy before a final colposcopy-guided biopsy at 19 weeks post-immunization.

Nine of the 18 patients experienced regression—six to low-grade dysplasia and three with complete regressions and no signs of dysplasia. Lesion size was significantly reduced in all but one of the patients, and these reductions were evident within a month of finishing vaccination. The nine patients whose disease did not regress received loop excision surgery, though no residual

disease was found in four of these patients, suggesting the additional time to surgery might have allowed for full lesion eradication, according to the authors.

“To the best of our knowledge, this response rate makes Vvax001 one of the most effective therapeutic vaccines for HPV16-associated CIN3 lesions reported to date,” said Yigit. “If confirmed in a larger trial, our results could mean that at least half of the patients with CIN3 might be able to omit surgery and avoid all its possible side effects and complications.”

In the standard-of-care setting, HPV clearance is linked to lower risk of recurrence, and Yigit said her team expects the same here. Ten of the 16 patients evaluated cleared HPV16, including all nine of those whose disease regressed. Two patients whose disease did not regress also cleared HPV16; however, their lesions harbored other HPV strains.

After a median follow-up of 20 months, none of the patients had recurrences.

Limitations of the study include limited follow-up time, small sample size, and lack of a control group for spontaneous regression due to ethical concerns.

This study was supported by the Dutch Cancer Society (KWF) and ViciniVax. Yigit declares no conflict of interest.

This news release was published by the American Association for Cancer Research on January 24, 2025.
