A promising therapeutic vaccine for cervical precancer

GX-188E—a human papilloma virus (HPV) DNA vaccine—shows encouraging efficacy in inducing regression of cervical intraepithelial neoplasia (CIN) 3.

Youn Jin Choi (Catholic University of Korea, Seoul, South Korea) and colleagues did a multicentre, randomised, phase 2 trial to assess the ability of the GX-188E vaccine to induce histopathological regression of CIN3 (a premalignant lesion of cervical cancer) in patients who were also positive for HPV types 16 or 18 at four hospitals in South Korea.

72 patients were randomly assigned (1:1) to receive intramuscular injections of GX-188E 1 mg or 4 mg at week 0 (visit 2), week 4 (visit 3) and week 12 (visit 4). Follow-up assessments were done at 14 weeks (visit 6) and 20 weeks (visit 7). At visit 7, efficacy of GX-188E was assessed by cervical biopsy and HPV DNA test, and at a further visit (visit 8; an extension phase at 36 weeks' follow-up) patients were reassessed by cervical biopsy. The primary endpoint was histopathological regression of CIN3 to CIN1 or below at visit 7. The secondary endpoint was the proportion of patients with HPV viral clearance at visits 7 and 8.

Of 71 patients given the GX-188E vaccine, 36 received the 1 mg dose and 35 received the 4 mg dose. 33 (52%) of 64 patients assessed at visit 7 and 35 (67%) of 52 patients assessed at visit 8 had histopathological regression of CIN3. HPV clearance was noted in 24 (73%) of 33 patients with histopathological regression at visit 7 and in 27 (77%) of 35 patients at visit 8. The investigators noted an inverse association between histopathological regression of CIN3 and the E6/E7 variants of HPV type 16 (D25E, V83L, and N29S). Serious adverse events (eg, pneumonia) were rare—affecting 5·6% of patients in the 1 mg dose group and 2·9% in the 4 mg dose group—and none were judged to be related to treatment.

According to Howard Bailey (University of Wisconsin Carbone Cancer Center, Madison, WI, USA), "DNA-based vaccines against HPV16 E6/E7 have the potential to eradicate chronic HPV16 infections and resultant dysplasia." Ashish Deshmukh (UTHealth School of Public Health, Houston, TX, USA) commented, "Screening to detect HPV-induced precancerous lesions along with therapeutic HPV vaccination to prevent progression to cancer (through clearance of precancerous lesions) has a great potential to decrease cancer burden. The findings from [this study] are promising and add to the continued progress towards the control of HPV-associated malignancies."

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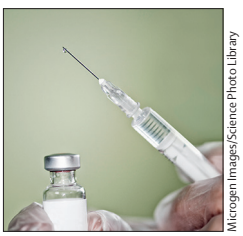

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For the **study by Choi and colleagues** see *Clin Cancer Res* 2019; published online Nov 14. DOI:10.1158/1078-0432.CCR-19-1513