COLLEGE OF PHARMACY
PHARMACEUTICAL SCIENCES
UNIVERSITY OF MICHIGAN

Pharmaceutical Sciences

"HPV VLP Vaccines: Moving Toward a Single Dose"

Presented by:

John T. Schiller
National Cancer Institute, NIH

Wednesday, October 25, 2017
Room 2548 C.C. Little Building
4:00-5:00 pm

HPV virus-like particle (VLPs) vaccines have demonstrated exceptional efficacy in clinical trials and encouraging effectiveness in national immunization programs in preventing infection and neoplastic diseases by the vaccine targeted types when administered in three intramuscular doses over six months. Based on immunobridging studies, two dose regimens are becoming widely adopted for vaccinees less that 15 years old. In post hoc analyses of an NCI sponsored efficacy trial of Cerarix in young Costa Rican women, we observed non-inferior protection from persistent infection in HPV16/18 in subjects receiving two or even a single dose of the vaccine, now out to seven years after vaccination. Unexpectedly, the VLP antibody titers for both HPV16 and HPV18 were stable in years one through seven in almost all one dose recipients. Plateau GMT titers were approximately ten-fold higher than those detected after natural infection and only four-fold lower than those measured in three dose recipients. The quality of the antibody response, as measured by avidity and neutralization/binding titer ratios were similar for all vaccine dose groups. Similar single dose results were recently reported in four year post hoc analyses of a GSK-sponsored trial of Cervarix and in an IARC-sponsored trial of Gardasil. We believe that the particulate nature and repetitive closely spaced epitopes on the VLP surface largely accounts for their exceptional ability to consistently induce durable antibody responses, even after a single dose. In addition, HPV's unique mechanism of infecting their target epithelia in vivo appears to make them exceptionally susceptible to inhibition by virion-binding antibodies. Based on these observations, the NCI has initiated a four-year randomized clinical trial in 12-16 year old Costa Rican females that will compare one and two doses of Cervarix and Gardasil-9 for induction of neutralizing antibodies and protection from persistent HPV infection. The results of this trial, coupled with the long term follow up of the post doc cohorts and the biological plausibility from laboratory studies, should provide important information to decision makers concerning the advisability of adopting single dose HPV VLP immunization programs.

For more information on the weekly PharmSci department
Seminar series, please view our website:
https://pharmacy.umich.edu/pharmsci/seminars