Retrovirology

Poster presentation

P19-47. Novel adenovirus type 5 vaccine platform induces cellular immunity against HIV-1 Gag, Pol, Nef despite the presence of Ad5 immunity

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Background

Recombinant Adenovirus serotype 5 (Ad5) vectors have been used as vaccine platforms to induce cell mediated and humoral immune responses in human clinical studies. The immune response induced by Ad5 vaccines can be mitigated due to pre-existing Ad5 immunity. The Ad5 [E1-, E2b-] platform is an Ad5 vector with novel deletions in the Ad5 DNA polymerase and the preterminal protein genes contained in the E2b region. This vector has been reported to allow for induction of potent immune responses to transgene antigens in the presence of Ad5 immunity. This vector expressing a tumor associated antigen is now advancing to clinical evaluation as a cancer therapeutic agent. We previously reported the use of the Ad5 [E1-, E2b-] platform to induce cellular immune responses (CMI) against HIV-1 Gag in Ad5 hyper immune mice.

Methods

Here, the effectiveness of this vaccine platform was evaluated using a triad mixture of HIV-1 Gag, Pol, and Nef as antigenic transgenes.

Results

Broad CMI was induced following vaccination with the HIV-1 expressing vectors in Ad5 naive and Ad5 immunized mice. A mixture of the three vaccines induced CMI against each transgene product even in the presence of hyper Ad5 immunity. These studies revealed that CMI responses to immunization with Ad5 [E1-, E2b-]-gag, Ad5 [E1-, E2b-]-pol or Ad5 [E1-, E2b-]-nef vectors were transgene specific and did not induce CMI responses against irrelevant antigens such as carcinoembryonic antigen (CEA), herpes simplex virus glycoprotein B (HSV), cytomegalovirus (CMV) or influenza virus antigens.

Conclusion

We are evaluating this recombinant triad viral vector as an HIV-1 vaccine in a non-human primate model.