Retrovirology

Poster presentation

P17-27. Development of recombinant adenovirus 28 vectors for HIV vaccines

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Background

Recombinant Adenovirus 5 vector (rAd5) induces potent immune responses against recombinant antigens, but its efficacy may be limited by anti-Ad5 neutralizing antibodies and there is considerable seroprevalence in humans. Alternative viral vectors with rare seroprevalence and similar or higher immunogenicity compared to rAd5 are under development.

Methods

We have generated rAd vectors derived from a rare human serotype adenovirus, Ad 28, encoding HIV envelope (rAd28-Env) and evaluated its ability to transduce dendritic cells (DC) in humans and mice. We also have examined the immunogenicity of rAd28-Env in various immunization regimens, such as single intramuscular injection, DNA prime/rAd boost and rAd prime/rAd boost immunizations in mice.

Results

rAd28 tranduced human plasmacytoid DC, myeloid DC, and monocytes efficiently and stimulated the production of higher IFN-α and TNF secretion by these DCs than rAd5. rAd28-Env induced comparable systemic cellular and humoral immune responses to Ad5-Env in DNA prime/rAd boost immunization, but it stimulated lower levels of mucosal cellular immune responses than rAd5-Env. However, rAd28-Env prime followed by rAd5-Env boost regimen increased mucosal and systemic cellular immune responses more effectively than other rAd prime/rAd boost regimens. Furthermore, this immunization regimen also stimulated potent systemic humoral immunity. Its efficacy in protecting against SIV challenge in non-human primates is in progress, and the status of these studies will be described.

Conclusion

rAd28 represents a promising rare serotype vector that is suitable for further clinical development of an HIV vaccine.