Retrovirology

Poster presentation

P02-02. Analysis of antigen specific degranulation potentials using IL-12 or IL-28B during HIV DNA Vaccination

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Background

A number of studies have suggested that CD8 T cells play an important role in control of HIV/SIV replication. Recently, it has been shown that CD8 T cells taken from HIV-positive long term non-progressors are more efficiently cytotoxic than those from rapid progressors. We therefore endeavored to test vaccine adjuvants for their ability to generate antigen specific CD8 T cells with a significant capacity for cytolytic degranulation. The adjuvants tested for this purpose were IL-12 and IL-28B.

Methods

Animals were immunized using either a multi-clade consensus HIV Gag construct or multi-clade consensus HIV Pol construct, with or without adjuvant. All animals received electroporation during the immunization process using the Cellectra device manufactured by VGX Pharmaceuticals.

Results

In mice, the inclusion of either adjuvant increased antigen-specific IFNgamma ELISpot numbers 3 to 4 fold over antigen alone and lead to significant differences in antigen-specific Perforin upregulation. Both IL-12 and IL-28B were able to induce 100% protection from death associated with infection following a lethal influenza challenge, suggesting both adjuvants may induce potent cellular immune responses. However, only IL-28B lead to a significant increase in degranulation as measured by CD107a expression when compared with antigen alone, suggesting this cytokine has more potent cytotoxicity-inducing affects than IL-12. In macaques, both IL-12 and IL-28B augmented IFNgamma ELISpot results two-fold over antigen alone. Similarly to what was seen in mice, however, only IL-28B induced a statistically significant amount of degranulation as measured by CD107a expression when compared to animals that did not receive adjuvant.

Conclusion

While both adjuvants augmented antigen-specific IFN-gamma ELISpot responses, only IL-28B was able to induce statistically significant amounts of cytolytic degranulation. Therefore, further study of IL-28B as an adjuvant for cytotoxicity is warranted.