

Abstract - Vaccine-induced IgG2 anti-HIV p24 is associated with control of HIV in patients with a 'high-affinity' Fc[gamma]RIIIa genotype

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Objectives

We have previously shown that vaccination with a recombinant fowlpox virus carrying the genes for HIV Gag-Pol and interferon-gamma (IFN- γ) was associated with partial control of HIV replication after antiretroviral therapy (ART) was ceased but not with increased anti-HIV T-cell responses. Because IFN- γ enhances IgG2 production, and IgG2 antibodies to HIV antigens and the 'high-affinity' polymorphism of Fc γ RIIIa (the major Fc receptor for IgG2) have been associated with a favourable outcome of HIV infection, we examined the association of IgG2 antibodies to HIV p24 and 'high-affinity' polymorphisms of Fc γ RIIIa with control of HIV replication in these patients.

Methods

Plasma from weeks 0 (cessation of ART 1 week after the last vaccination), 9 and 20 was available from patients who had received the full construct vaccine, a partial construct (without IFN- γ) or placebo. IgG2 and IgG1 anti-p24 and anti-gp41 were assayed and all patients were genotyped for the Fc γ RIIIa 131 R/H polymorphism that affects IgG2 binding.

Results

At week 0, IgG2 anti-p24 was present in five of nine full construct patients but none of 14 partial construct or placebo patients and was associated with a smaller increase in plasma HIV RNA over 20 weeks. Patients with IgG2 anti-p24 and the 'high-affinity' polymorphism of Fc γ RIIIa exhibited lower HIV replication than other patients at week 20.

Conclusion

The role of IgG2 anti-HIV antibodies and Fc γ RIIIa in the control of HIV replication should be investigated further. Inclusion of an IFN- γ gene in DNA vaccine constructs might be a means of enhancing IgG2 antibody production.

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