Vaccine-induced cellular immune responses reduce plasma viral concentrations after repeated low-dose challenge with pathogenic simian immunodeficiency virus SIVmac239.

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Abstract
The goal of an AIDS vaccine regimen designed to induce cellular immune responses should be to reduce the viral set point and preserve memory CD4 lymphocytes. Here we investigated whether vaccine-induced cellular immunity in the absence of any Env-specific antibodies can control viral replication following multiple low-dose challenges with the highly pathogenic SIVmac239 isolate. Eight Mamu-A*01-positive Indian rhesus macaques were vaccinated with simian immunodeficiency virus (SIV) gag, tat, rev, and nef using a DNA prime-adenovirus boost strategy. Peak viremia (P = 0.007) and the chronic phase set point (P = 0.0192) were significantly decreased in the vaccinated cohort, out to 1 year postinfection. Loss of CD4(+) memory populations was also ameliorated in vaccinated animals. Interestingly, only one of the eight vaccinees developed Env-specific neutralizing antibodies after infection. The control observed was significantly improved over that observed in animals vaccinated with SIV gag only. Vaccine-induced cellular immune responses can, therefore, exert a measure of control over replication of the AIDS virus in the complete...
absence of neutralizing antibody and give us hope that a vaccine designed to induce cellular immune responses might control viral replication.

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