Cross-clade HIV-1-specific neutralizing IgA in mucosal and systemic compartments of HIV-1-exposed, persistently seronegative subjects.


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Abstract

There is an urgent need for a universally effective HIV-1 vaccine, but whether a vaccine will be able to protect against HIV-1 of different clades is a significant concern. IgA from HIV-1-exposed, persistently seronegative (HEPS) subjects has been shown to neutralize HIV-1 and to block epithelial HIV-1 transcytosis, and it may target novel HIV-1 epitopes. We have tested the ability of plasma and mucosal IgA purified from HEPS subjects to neutralize HIV-1 primary isolates of different viral clades and phenotypes. IgA from two groups of HEPS subjects was tested: sex workers from Nairobi, Kenya, where clades A and D predominate, and the heterosexual partners of individuals infected by clade B virus. HIV-1-infected and low-risk uninfected individuals were included as controls. IgA purified from the blood, genital tract, and saliva of most HEPS sex workers demonstrated significant cross-clade HIV-1 neutralization, whereas a more clade-restricted pattern of neutralization was found in partners of clade B-infected individuals. IgA purified from HIV-1-infected individuals also mediated cross-clade neutralization, whereas IgA from uninfected controls lacked neutralizing activity. In conclusion, mucosal and plasma IgA from HEPS subjects neutralizes HIV-1 of different clades. This ability to induce HIV-1-specific systemic and mucosal IgA may be an important feature of an effective prophylactic HIV-1 vaccine.

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