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HIV-1 infection and circulating peripheral blood B cell subpopulations

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Background

Progression of HIV-1 infection can be monitored by studying the frequency of B cell subpopulations which could serve as a better surrogate marker. The study evaluated the distribution as well as the frequency of B cell subsets in peripheral blood of HIV-1 infected Indian individuals.

Methods

In HIV infected, ART naïve adults and healthy controls, frequency of B cell subpopulations were measured by flow cytometry. Difference between groups was compared using Student t test and p value of <0.05 was considered significant.

Results

In HIV infected adults, a significant reduction in non-switched memory B cells (CD19+IgD+CD27+) was observed, compared to healthy controls (p=0.046). With ongoing viral replication and reduced CD4 count, an expansion in $CD21^{lo}CD27^{-}$ (tissue like memory) population was observed and the correlation was statistically significant (p=0.0004). The mean frequency of $CD21^{hi}CD27^{hi}$ (resting memory) was significantly higher in controls (p=0.0002) compared to HIV-1 infected adults, while tissue like memory were highly expanded in HIV infected adults compared to controls (p=0.0001). B cells in HIV-1 infected adults expressed higher frequency of CD95 compared to healthy controls (p=0.0004).

Conclusions

HIV mediated alteration in B cell development and differentiation may result in loss of switched and non-switched memory B cells. Moreover, association of persistent viremia with expansion of $CD21^{lo}$ tissue like memory cells suggests loss of CD21 expression as a marker of ongoing HIV replication. B cells in HIV-1 infected adults are more prone to *Fas* mediated apoptosis compared to healthy controls.

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