Retrovirology

Poster presentation

Primary HIV-1 Infection Sets the Stage for Important B Lymphocyte Dysfunctions

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Background

B lymphocytes of patients with chronic HIV-1 infection (CHI) show functional and phenotypic abnormalities. We investigated the effects of primary HIV-1 infection (PHI) on activation, differentiation and survival of B cells. The effects of antiretroviral therapies on B cell dysfunctions in PHI were also studied.

Design and Methods

B cells of 31 PHI patients (sampled at baseline, 1 month and 6 months post therapy), 26 CHI patients, and 12 healthy donors were studied for surface expression of Fas, LAIR-1, CD70, intracellular expression of Bcl-2, and spontaneous apoptosis. Four-colour FACS (IgD+IgM+CD19+CD27), and short-term PBMC cultures to analyse induction of CD25 on B cells were performed in 5 PHI patients.

Results

In PHI, naïve and memory B lymphocytes were highly activated, manifested by hypergammaglobulinemia, altered expression of Fas and LAIR-1, and increased spontaneous apoptosis. Antiretroviral treatment improved the activation/differentiation status of B cells, reduced apoptosis to levels comparable to healthy individuals and restored the ability of B cells to respond to T-cell dependent activation. B cells of PHI patients on HAART recovered better compared to patients on RTI only. Data obtained on 5 PHI patients at baseline showed decreased IgM+ memory B cells and lower induction of CD25 expression on B cells upon T cell activation. These parameters were normalized after 6 months of antiretroviral treatment.

Conclusion

B cell dysfunctions in HIV-1 infection appear during primary infection and initiation of antiretroviral therapy early during infection may help preserve the B cell compartment.