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The effect of plasma auto - IgGs on CD4$^+$ T cell apoptosis and recovery in HIV - infected patients under antiretroviral therapy

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Abstract

Although effective antiretroviral therapy (ART) suppresses HIV viral replication, prevents AIDS - related complications, and prolongs life, a proportion of patients fails to restore the patients' CD4$^+$ T cell number to the level of healthy individuals. Increased mortality and morbidity have been observed in these patients. In the current study, we have investigated the role of auto - IgGs in CD4$^+$ T cell apoptosis and recovery in a cross - sectional study. All HIV$^+$ subjects were on viral - suppressive ART treatment with a different degree of CD4$^+$ T cell reconstitution. Total auto - IgG binding on CD4$^+$ T cell surfaces and its associated apoptosis and CD4$^+$ T cell recovery were analyzed by flow cytometry ex vivo. Total IgGs from plasma were tested for their binding capacities to CD4$^+$ T cell surfaces and their mediation to CD4$^+$ T cell death through NK cell cytotoxicity in vitro. HIV$^+$ subjects had increased surface binding of auto - IgGs on CD4$^+$ T cells compared with healthy controls, and IgG binding was associated with elevated CD4$^+$ T cell apoptosis in HIV$^+$ subjects but not in healthy controls. Plasma IgGs from HIV$^+$ subjects bound to CD4$^+$ T cells and induced cell apoptosis through NK cytotoxicity in vitro. Soluble CD4 (sCD4) preincubation prevented NK cell - mediated CD4$^+$ T cell death. Our results suggest that plasma autoantibodies may play a role in some HIV$^+$ patients with poor CD4$^+$ T cell recovery under viral - suppressive ART.