CD160 is up-Regulated on CD8+ T Cells during HIV Infection and Associated with Immune Protection

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ABSTRACT

It remains elusive on the immune protective mechanism during HIV infection. Here, we found that CD160 was significantly up-regulated on CD8+ T cells during HIV-1 infection and culminated in slow progression/long-term non-progression group. Moreover, the frequencies of CD160+CD8+ T cells were correlated significantly with CD4+ T-cell counts and inversely associated HIV-1 viral loads. Considering CD160 with anti-CD160 antibody significantly enhanced the capacity of CD8+ T cells to produce Granzyme B and to degranulate their cytotoxic molecules but resulted in decreased production of IFN-gamma in response to cognate antigen stimulation. These results demonstrated for the first time that CD160 is likely to play a protective role during HIV-1 infection and transduces both stimulatory and inhibitory signals to CD8+ T cells in regulating different functionalities. The triggering antibody of CD160 may provide a useful tool for clinical immune intervention during HIV infection or even during other persistent viral infection.

INTRODUCTION

The significant up-regulation of inhibitory molecules like CD160 was a feature of chronic infections like HIV-1 infection. The exact role of CD160 on CD8+ T cells during HIV-1 infection remains poorly understood.

RESULTS

We showed that the expression of CD160 on CD8+ T cells was significantly up-regulated during HIV-1 infection. The increased percentage of CD160+ CD8+ T cells in the subsets of TEM/TEMRA CD8+ T cells, which was significantly higher in slow progressors (SP) than in typical progressors (TP), was associated positively with CD4+ counts but inversely with HIV-1 viral loads. CD160+ CTLs exhibit an dominant PD-1- CD38- HLA-DR+ phenotype. The intracellular staining of non-stimulated PBMC showed that the proportions of CD160+ Granzyme B+/Perforin+ CTL in HIV-1 SP are significantly higher than CD160- Granzyme B+/Perforin+ CTL. Furthermore, we observed that anti-CD160 resulted in increased HIV-gag specific Granzyme B but not IFN-gamma by ELISPOT. We also found that degranulation ability of HIV-gag/CEF-specific CD160+ CTL was stronger than that of CD160- CTL, addition of anti-CD160 led to significantly enhanced degranulation capacity of CD160high CTL subsets.

CONCLUSION

Our data indicates that engagement of CD160 may trigger a co-stimulatory signal pathway for cytotoxic function of CD8+ T cells and thereby play a immune protective role in HIV-1 infection.

REFERENCES


ACKNOWLEDGEMENTS

The researches were supported by National Grand Program on Key Infectious Disease Control (Grant #2006ZX10001-002), China Ministry of Health & Ministry of Science and Technology, and by project 81072499H10145, National Natural Science Foundation of China. We also thank all study participants for their donation of blood.