Antiviral T cell immunity in HIV-infected children on long-term antiretroviral therapy

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Conclusions

The preliminary data suggest that T cells against the chronic viruses CMV and EBV were significantly altered in both the CD4 and CD8 T cell compartment, exhibiting higher functional capacity in primarily the CD8 T cells of HIV-infected children. In contrast, the CD4 T cell responses against common cold viruses OC43 and RSV, though fewer in number, were comparable to age-matched controls.

Future perspectives

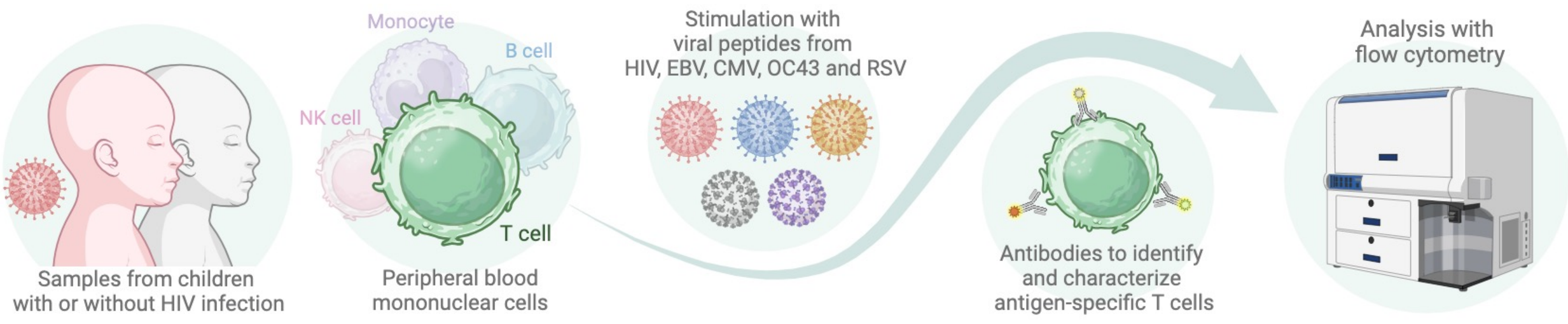
These findings will be further explored with an additional flow cytometry panel focusing on T cell exhaustion, TCR sequencing using single-cell RNA sequencing and serology analysis.

Introduction

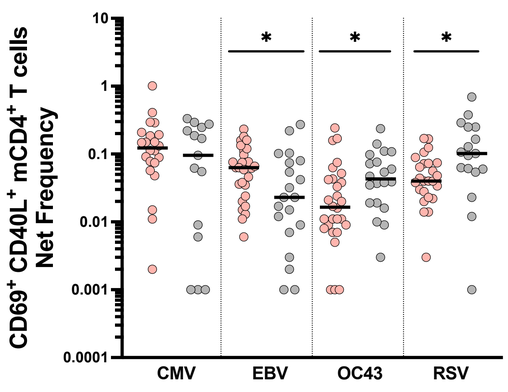
Over 90 % of children with human immunodeficiency virus (HIV) are infected during gestation, delivery or infancy. Today, effective antiretroviral therapy (ART) can limit the deleterious effects of HIV on the immune system. However, challenges with treatment adherence and drug resistance affects the ability to control virus activity in pediatric HIV. Furthermore, how early and long-term exposure to ART and HIV affect the development of the antiviral immune system is understudied.

Aim

Our aim is to study the immune recovery and antiviral T cell responses in HIV-infected children on ART compared to and age-matched, healthy children.



Antigen-specific mCD4 T cells

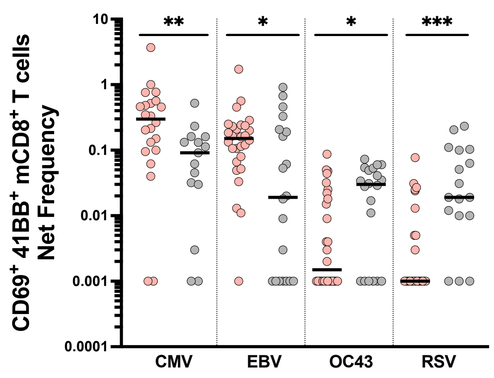


Differences in the frequencies of antigen-specific CD4 and CD8 T cells between HIV-infected children on ART and age-matched, HIV negative children

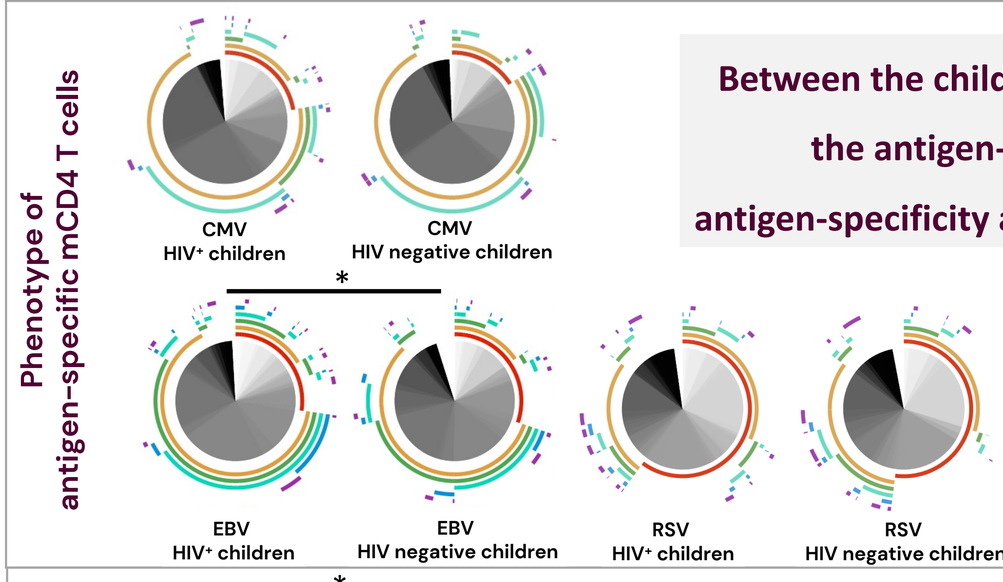
HIV+ children on ART
HIV negative children

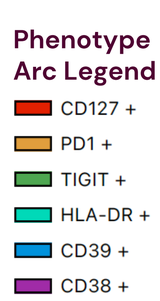
Black line is median. Mann Whitney. *, p < 0.05; **, p < 0.01; ***, p < 0.001

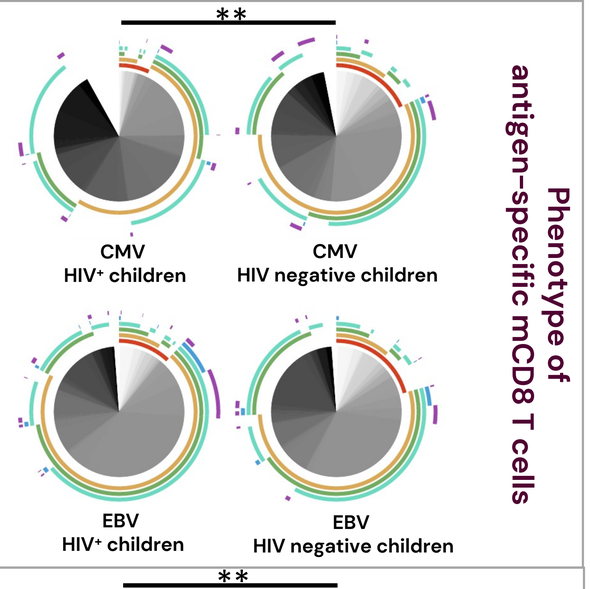
Antigen-specific mCD8 T cells



Between the child cohorts, phenotypic differences to the antigen-specific T cells depend on the antigen-specificity and compartment (CD4 or CD8 T cell)

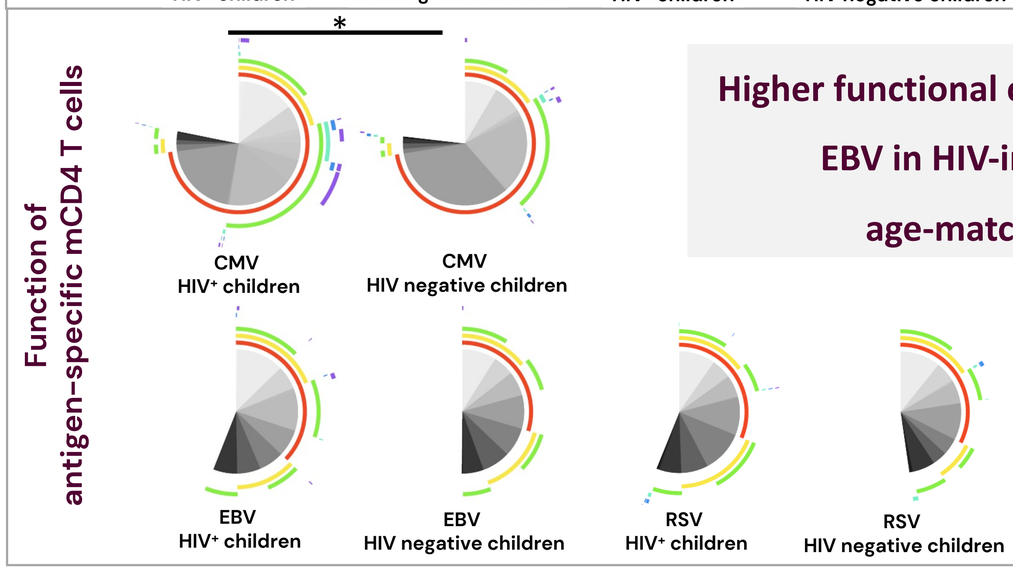


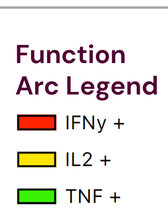


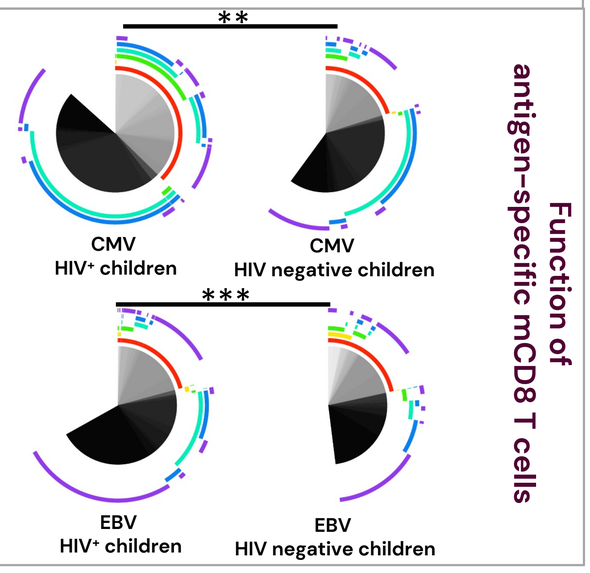


Permutation test. *, p < 0.05; **, p < 0.01; ***, p < 0.001

Higher functional capacity to chronic viruses CMV and EBV in HIV-infected children compared to age-matched, HIV-negative children







Permutation test. *, p < 0.05; **, p < 0.01; ***, p < 0.001

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