



Predicting disease progression in vertically HIV-1-infected children using both 1st year slope and age 1 year absolute value of 3 immunological markers

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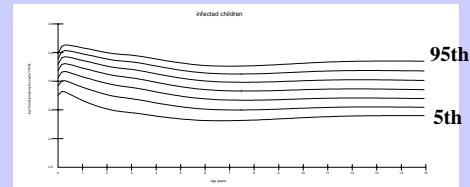
Introduction

CD4⁺ cell counts have been shown to be associated with disease progression in children. However it is unclear whether CD4⁺ cell counts over a period before the measurement of the absolute value would provide additional information in predicting disease progression.

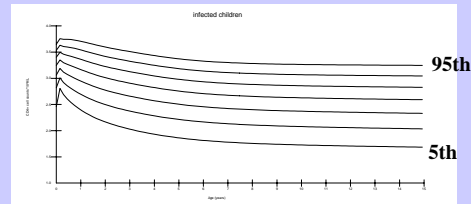
Methods

Both the slope of total lymphocyte (TLC), CD4⁺ cell count and CD4⁺ percentage over the 1st year of life and the absolute value of these markers at age one year were analysed for 98 HIV-infected children enrolled in a European birth cohort, using Cox proportional hazards models. Non-parametric tree structured survival analysis models were used to determine which measures of the same lymphocyte marker best predicted disease progression risk (defined by CDC stage C or death). Z-scores for log₁₀TLC, CD4 and CD4% were calculated and centiles over age estimated

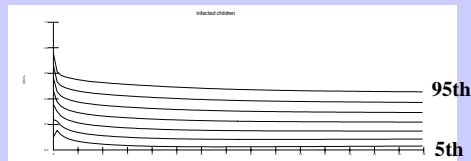
Centiles for TLC, CD4 cell counts and CD4% for infected children, over age TLC



CD4



CD8



Results I

The mean values for the absolute values and slopes relating to the 1st year of life differed significantly between the 22 progressors and 76 non-progressors. For instance, mean log₁₀ CD4⁺ cell count at 1 year of age and the CD4 slope in year 1 for the 22 progressors were 2.89 and -0.61 compared with 3.25 and -1.17 for those not progressing ($p < 0.0001$)

Results II

In nonparametric tree models, progression was best predicted by the absolute value of log₁₀ TLC at age 1 year and the slope of CD4⁺ percentage over the first year of life. Adjusting for ART as a time-dependent covariate (after the measurement, but before progression) did not substantially change the estimates allowing for gender and race a 0.5log₁₀ increase in TLC at age 1 was associated with a 83.9% reduced disease progression; a 10-fold increase in CD4% with a 29.9% reduction. The absolute value for each marker was most predictive but slope refined the prediction

Discussion

Absolute values of the 3 immunological markers were strongly indicative of disease progression; their slopes over the first year of life provide additional information, especially for median absolute values. Centiles over age show remarkable stability after about age 5 years

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