

Circadian variation of absolute CD4 count in healthy individuals and HIV-AIDS patients in Douala Cameroon

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Background: Decrease in T-helper lymphocyte percent and absolute number is one of the most important immunologic alterations in HIV-related disorders. Absolute CD4 counts are therefore routinely used by clinicians to initiate and monitor treatment of HIV-AIDS patients although they present circadian variation while CD4 % is being only used for children.

Objectives: Analyse the variability of absolute CD4 and CD4% count throughout a day on volunteers of both sexes.

Methods: 2 groups of people were investigated. The first was made of 30 healthy volunteers from whom 2ml of venous EDTA blood was collected four times a day at intervals of four hours (07-08 am, 11-12 am, 03-04 pm and 07-08 pm). In the second group of 53 women among whom 11 were HIV positive. 2 ml of venous blood were collected at 08-10 am and 02-04 pm. Blood samples were analyzed for lymphocytes subsets by flow cytometry on CyFlow Counter (Partec, GmbH, Görlitz, Germany). Statistical analyses were performed using the Wilcoxon test.

Results: Our study shows significant increase of the absolute CD4 count ($P < 0,05$) in both healthy and HIV positive individuals. Rate of increase of the absolute CD4 counts was around 13% after 4 to 6 hours. This confirms circadian variation of lymphocytes previously observed and related to cortisol concentration in the blood stream. CD4 percentage presented no significant increase.

Conclusions and Recommendations: Our results confirm that a fix sampling time should be considered for routine absolute CD4 count for management of AIDS patients. We suggest that CD4 percentage should also be considered for the monitoring of adults living with HIV-AIDS.

Key words: *Circadian variation, CD4⁺ T cells, total lymphocytes, CD4 percentage*

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