CRP and CD4/CD8 ratios as predictors of cardiovascular risk changes in HIV-infected patients

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Introduction: Cardiovascular disease (CVD) frequency is high in individuals with human immunodeficiency virus (HIV) infection receiving antiretroviral therapy, mainly because of lipodystrophy and endothelial dysfunction leading to immune activation and chronic low inflammation degree, which in turn promote atherosclerosis. The question arises whether the CD4/CD8 ratio can have an influence on the increase in cardiovascular risk in patients with HIV infection[1-3] *Aim*: To examine whether the CD4/CD8 ratio, as well as C-reactive protein (CRP), can be predictors in monitoring cardiovascular risk changes in HIV-positive patients during two years of combination antiretroviral therapy (cART).

Patiens and Methods: The study was designed as a retrospective-prospective, cohort longitudinal and clinical study. The sample size was determined based on the following conditions: 1) alpha value=0.05, 2) study power (1-B)=0.8, and 3) effect size=0.3351 (average therapeutic effect of increasing CD4/CD8 ratio one year after cART administration). With the receiver operating characteristic (ROC curve), we showed whether CRP and the CD4/CD8 quotient (ratio) can be markers for CVD risk that was monitored in different periods, at baseline, and after 3, 6, 12, 18, 24 months. We checked the statistical significance of the regression model with the analysis of variance (ANOVA) test, and the value model (r2) presented as % variance. In HIV-infected patients, the values of CD4 and CD8, and CRP are preferred for cardiovascular risk assessment given the data-collection on adverse effects of anti-HIV drugs (D:A:D score).

Results: A total of 76 HIV patients were included in the research, 67 (88.2%) men and 9 (11.8%) women. The average age of the subjects was 35.2+8.7 years. Before the start of cART, CD4/CD8 ratio, CRP, and risk for CVD were not significantly correlated (p>0.05). However, after 24 months of treatment, CRP was positively and strongly correlated with the risk for CVD (rho =0.747; p=0.0001) and was considered a marker of intermediate risk for CVD (p=0.0001; area under a curve (AUC) 0.882). The CD4/CD8 ratio was positively correlated with the risk for CVD (rho -0.409; p=0.0001) after 12 months of therapy and was considered a marker of low CVD risk after 24 months from the start of therapy (p=0.001; AUC -0.762). Finally, after 18 months of cART therapy, the CD4/CD8 ratio was negatively and moderately strongly correlated with both CRP and CVD risk (rho=-0.483 to rho=0.483; p<0.01), which was maintained even after 24 months.

Conclusion: CD4/CD8 ratio and CRP have been shown to be significant predictors of CVD risk. CD4/CD8 ratio and CRP were negatively and moderately strongly correlated. The higher the CD4/CD8 ratio, the lower the CRP values and the lower the risk for CVD during 24 months of cART therapy.

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LITERATURE

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