Similar Reducations in Markers of Inflammation and Endothelial Activation after Initiation of Abacavir/Lamivudine (ABC/3TC) or Tenofovir/Empicritbine (TDF/FTC) in the HEAT Study

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Introduction

Endothelial dysfunction and chronic inflammation have been reported in HIV-infected patients. Elevations in the endothelial marker, von Willebrand factor (vWF), were observed during treatment interruption in SMART.3,4 Elevations in vWF and hsCRP were proposed by SMART investigators as independent risk factors for major adverse cardiac events in a prospective, randomized study of HIV-infected patients.5 This analysis compared the effects of initiating ABC/3TC or TDF/FTC on vWF and hsCRP in a subset of patients in the HEAT study population.

CV Risk and Role of Biomarkers

Conventional disease risk factors and markers of inflammation and endothelial dysfunction were used to assess CV risk in HIV infection. HIV-infected patients have a greater prevalence of existing, index disease, and new-onset inflammatory markers compared to the general population. Pro-inflammatory markers have been used as markers for increased CV risk.

Methods

Available stored plasma samples from HEAT study subjects were retrospectively analyzed for both ABC/3TC and TDF/FTC concentrations at week 24, week 48, and week 96. Mean CD4+ cell counts were reported at week 48 and week 96 for the total HEAT study population. The declines in hsCRP, IL-6, and sVCAM concentrations in the biomarker population were compared to those in the overall study population.

Results

ABVC/3TC (n = 199) had confirmed virologic failure. Among these 476 subjects, 22 (16 ABC/3TC; 6 TDF/FTC) had confirmed virologic failure. This analysis compared the effects of initiating ABC/3TC and TDF/FTC on vWF and hsCRP in a subset of patients in the HEAT study population.

Figures 2 and 3 show the biomarker concentrations by study week, geometric mean (GM), and percent change from baseline in GM (95% CI) for each treatment group. The biomarker concentrations were analyzed by using fixed effects repeated measures analysis of variance (ANOVA) to assess a treatment by time interaction effect in the biomarker population.

Discussion

Traditional CVD risk factors such as age, race, sex, hyperlipidemia, hypertension, low density lipoprotein cholesterol, diabetes, smoking, and obesity are increased in HIV and are strongly associated with increased CV risk. Novel biomarkers have been suggested as indicators of increased cardiovascular risk and may provide additional information over and above the use of traditional risk factors in both general and HIV populations.

Conclusions

The declines in biomarker concentrations in the ABC/3TC and TDF/FTC arms were statistically significant and not significantly different between treatment groups at any time point. In the ABC/3TC arm, statistically significant decreases in biomarker concentrations were also observed in subgroups defined by baseline characteristics, such as lower BMI, lower vWF levels, and lower hsCRP levels at baseline.