Functional Haplotypes in the ADIPOQ Gene are Associated with Underweight, Immunosuppression and Viral Suppression in Kenyan HIV-1 Infected Antiretroviral Treatment Naive and Experienced Injection Substance Users

Abstract

Background

Human immunodeficiency virus and injection substance use have an influence on genes and gene expression. These effects could be beneficial or detrimental in defining disease outcomes. Adiponectin gene is key in modulating metabolic and immunoregulatory functions. Understanding the effects of human immunodeficiency virus and injection substance use on the gene in the context of antiretroviral therapy is important for predicting disease outcomes.

Methods

This cross-sectional genetic study determined polymorphisms in the promoter region of adiponectin gene. Two variants were analyzed: rs2241766 and rs266729. Polymorphisms were associated with clinical markers of disease outcome; underweight, immunosuppression and viral suppression. The variants were genotyped via random fragment length polymorphism.

Result

GC haplotype was associated with higher odds of having underweight (OR, 2.21; 95% CI, 1.83–4.60; P=0.008 *vs.* OR, 2.30; 95% CI, 1.89–4.71; P=0.006) in antiretroviral treatment - naive and experienced injection substance users and immunosuppression (OR, 1.90; 95% CI 1.67–3.98, P=0.041) in naive. Bonferroni correction revealed GC haplotype carriers only to have low body mass index in both naive (median, 14.8; IQR, 3.2 kg/m^2; P=0.002) and experienced (median, 15.2; IQR, 3.2 kg/m^2; P=0.002) injection substance users. Circulating total adiponectin levels were higher in naive (median, 19.5; IQR, 7.9 µg/ml) than - experienced (median, 12.0; IQR, 4.4 µg/ml) injection substance users (P=0.0001). GC carriers presented with low serum adiponectin levels in both study groups.

Authors

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