Changes in cortisol/DHEA ratio in HIV-infected men are related to immunological and metabolic perturbations leading to malnutrition and lipodystrophy.

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Abstract

HIV-1 infection is associated with immune deficiency and metabolic perturbations leading to malnutrition and lipodystrophy. Because immune response and metabolic perturbations (protein and lipid metabolism) are partly regulated by glucocorticoids and DHEA, we determined serum cortisol and DHEA concentrations, and the cortisol/DHEA ratio in HIV-positive men, either untreated or receiving various antiretroviral treatments (ART), including highly active antiretroviral therapy (HAART). Cortisol levels were found increased in all patients, whatever the stage of the disease and independently of the ART treatment. In contrast, serum DHEA was elevated in the asymptomatic stage, and it was below normal values in AIDS patients, either untreated or mono-ART-treated. The DHEA level was low in HAART-treated patients with lipodystrophy (LD+) and highly increased in HAART-treated patients without lipodystrophy (LD-). Consequently, the cortisol/DHEA ratio was similar to controls in asymptomatic untreated or mono-ART-treated patients, but increased in AIDS patients. Interestingly, this ratio was increased in LD+ HAART-treated men, but normalized in LD- HAART-treated patients. Changes in the cortisol/DHEA ratio were negatively correlated with the in vivo CD4 T-cell counts, with the malnutrition markers, such as body-cell mass and fat mass, and with the increased circulating lipids (cholesterol, triglycerides, and apolipoprotein B) associated to the lipodystrophy syndrome. Our observations show that the cortisol/DHEA ratio is dramatically altered in HIV-infected men, particularly during the syndromes of malnutrition and lipodystrophy, and this ratio remains elevated whatever the antiretroviral treatment, including HAART. These findings have practical clinical implications, since manipulation of this ratio could prevent metabolic (protein and lipid) perturbations.

PMID: 11268428