



6th International Workshop on Adverse Drug Reactions and Lipodystrophy in HIV

25–28 October 2004 - Washington, DC, USA

HIV INFECTION IS ASSOCIATED WITH INCREASED SKELETAL APOPTOSIS ASSESSED BY TUNEL

Antiviral Therapy 2004; 9(6):L21 (abstract no. 29)

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OBJECTIVES: Increased apoptosis in CD4⁺ T lymphocytes plays an important role in the pathogenesis of HIV infection, probably through several viral proteins that have been proposed to be directly or indirectly associated with the dissipation of mitochondrial membrane potential, thereby inducing apoptotic cell death. The aim of the study was to assess whether this increase is also present in the skeletal muscle of HIV-infected patients.

METHODS: We included 18 healthy individuals without HIV infection as controls and five asymptomatic antiretroviral-naïve HIV-infected patients. Immunohistochemical reactions using monoclonal antibodies for TUNEL (deoxyribonucleotidyl-transferase-mediated-dUTP-biotin nick-end labelling) were performed on skeletal muscle samples from the deltoid muscle of the non-dominant arm of each patient and control. The specimens were coded with random numbers and read by three independent, blinded observers. The percentage of apoptotic cells was determined by means of an apoptotic index that was calculated by dividing the total number of positive staining myocyte nuclei in the TUNEL assay by the total number of the myocyte nuclei, and multiplying this value by 100.

RESULTS: The results were consigned in a semiquantitative scale (– if less than 1% of positive nuclei or cells were present, + if less than 1%, ++ if less than 5% and +++ if more than 5%). The TUNEL assay data showed significantly increased apoptosis in skeletal muscle of 80% of HIV patients when compared with uninfected individuals ($P < 0.01$). None of the control individuals were positive for TUNEL.

CONCLUSIONS: Skeletal muscle of HIV-infected patients exhibits increased apoptosis compared with healthy uninfected individuals. Further studies are necessary to elucidate the mechanisms by which HIV infection leads to increased apoptosis.

ACKNOWLEDGEMENTS: Supported by Fundación para la Investigación y la Prevención del Sida en España (FIPSE 3102-00 and 3161/00A), Fundació La Marató de TV3 (020210), Redes de Investigación en Mitocondrias (V2003-REDC06E-0) y Sida (RG173) del Fondo de Investigaciones Sanitarias and Suport a Grups de Recerca 2001/SGR/00379.

2004-10-25
29

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