Increased subclinical atherosclerosis in HIV-infected children and adolescents: relations with cardiovascular biomarkers, immune activation/senescence and HIV-related variables.

H.G.U. Gregorio Marañón (1), Hospital 12 de Octubre (2), H. La Paz (3), Hospital Universitario de Getafe (4), Hospital Carlos III (5), Hospital Ramón y Cajal (6). Madrid. Spain.

Background. HIV infection accelerates cardiovascular disease (CVD). The study of subclinical atherosclerosis in subjects without traditional CVD risk factors, such as children and adolescents, may help clarify the role of HIV infection, antiretroviral treatment (ART) and immune activation on the atherogenic process.

Methods. These are the definitive baseline results of the prospective CaroVIH Study. Carotid intima-media thickness (IMT) was measured with a portable echo-device (Phillips CX50) in a group of HIV-infected children and young adults and in a group of healthy subjects of similar sex and age. Cardiovascular biomarkers (hsCRP, IL-6, IL-8, MPO, VCAM, MCP-1, tPA, CD40L) in a random subgroup of 64 HIV+ and 30 HIV- subjects, and T-cell activation (CD38+HLADR+)/senescence (CD27-CD58+) in a random subgroup of 37 HIV+ and 11 HIV- subjects were determined.

Results. 300 subjects were included, 150 HIV-infected patients (97% vertical transmission, 76% on viral suppression, 97% on stable ART) and 150 healthy subjects. Mean age was 14.8±4.9 years, 62% were female. Age, gender, body-mass index (BMI), smoking status, frequency of hypertension or hypercholesterolemia were similar in both groups.
IMT was thicker in HIV-infected subjects compared to healthy individuals (mm) (0.434 ± 0.025 vs 0.424 ± 0.018, respectively, p<0.001). After adjustment by age, sex, BMI, smoking status, triglycerides and non-HDL cholesterol, HIV infection remained independently associated with thicker IMT (>p50 [0.42mm], OR, 2.3; 95% CI:1.3-4.1; p = 0.007). Among HIV-infected patients, in a multivariate analysis including time with detectable viral load, cumulative ART exposure, CD4 nadir, lipodystrophy, CD4 and CD8 counts, only CD4 nadir remained independently associated to increased IMT (>100 cells/mL, OR, 0.8, 95% CI, 0.7-0.9, p = 0.033). Regarding cardiovascular biomarkers, only t-PA and CD-40L were elevated in the HIV-infected patients (p<0.05). HIV-infected subjects presented higher frequencies of activated CD4 T-cells (p=0.016). Viremic patients showed higher frequencies of senescent CD8 T-cells compared to healthy subjects (p<0.001) and aviremic patients (p=0.02).

Conclusions. Structural changes of the vasculature present early in vertically HIV-infected subjects, as well as immune activation and senescence. These patients should be carefully monitored for the prompt detection and early treatment, in order to prevent cardiovascular disease.