CaroVIH Study: Cardiovascular risk and ventricular function evaluation in HIV-infected children and young adults.


BACKGROUND.
Since the introduction of antiretroviral therapy (ART) HIV-infected patients have a higher rate of aging-related diseases, including cardiovascular disease (CVD). Studies in HIV-infected adults have evidenced the presence of premature atherosclerosis and ventricular dysfunction, due to the virus and prolonged ART. Ultrasound techniques, like carotid intima-media thickness (IMT) measurement and Speckle Tracking Echocardiography (STE) could serve as early markers of CVD.

METHODS. Multicentre study including vertically HIV-infected children and young adults matched with controls by age and sex. Clinical and analytical variables were recorded. A portable echo-device (Philips CX50) was used during the complete study to measure IMT and to perform a complete echocardiography: M-Mode (shortening fraction (SF) and ejection fraction (EF)), 2D-echo, Doppler, tissue Doppler and STE.

RESULTS: 300 subjects were included (150 HIV-infected and 150 controls). Mean age was 14.8±4.9 years, 62% were female. Age, gender, body-mass index, smoking status, hypertension and hypercholesterolemia was 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).

A complete echocardiographic study was done in148 participants, 77 cases and 71 controls: HIV-infected subjects showed a lower systolic function (SF 36.3%(SD 6.41) and EF 66.2% (SD 8.39)) versus (SF 40.6% (SD 6.88) and EF 71.3% (SD 7.51)) (p<0.001) (all values within normal ranges). No differences were found in diastolic function and tissue Doppler examination. Ventricular torsion was greater in HIV-infected: 6.06° (SD 2.25) versus 5.49° (SD 1.97) (p=0.09). Longitudinal strain was analyzed in 54 subjects (28 cases and 24 controls), being -21.54% in HIV-infected and -22.29% in cases (p=0.299).

CONCLUSION.
Since childhood, cardiovascular risk, determined by IMT, is increased in HIV-infected subjects. Also EF and SF are lower in comparison to controls. Longitudinal strain impairment, which correlates with atherosclerosis, is not present in our cohort. Ventricular torsion is increased, in accordance with a senescent myocardium. Our results suggest that at adolescent age, HIV-infected patients have a premature myocardial tissue aging and not yet affection in tissue perfusion even though higher cardiovascular risk is present.