BACKGROUND and OBJECTIVES

Increased cardiovascular risk (CVR) in HIV patients is multifactorial. HIV infection is related with lipid disturbances and chronic inflammation. The relation between them and HIV is not well known.

The objectives of the study were:
- To compare the changes in LDL particles phenotype and inflammatory biomarker levels in naïve HIV-infected patients that started or not combined-ART (c-ART) over a 2-year follow-up.
- To investigate associations between LDL particle phenotype, inflammatory biomarkers and HIV factors.
- To investigate correlations between LDL particle phenotype, inflammatory biomarkers and HIV factors with subclinical atherosclerosis assessed by carotid ultrasound.

METHODOLOGY

Design: Prospective, multicenter, comparative study carried out in a Hospital from Barcelona (Hospital Universitari de Bellvitge) and Hospital from Australia (Baker Heart and Diabetes Institute). Two groups of naïve HIV patients (Group A:CD4>500 cell/µL, not starting c-ART at baseline; group B: CD4<500 cell/µL, starting c-ART at baseline) were compared with healthy controls (HC), matched by age and sex. In group A patients experiencing a CD4 decrease to <500 cell/µL were recommended to start c-ART and were not included in the follow-up analyses.

Exclusion criteria: diabetes mellitus, previous CV disease, secondary dyslipidemia, malignant disease or any active infection or inflammatory disease, body mass index (BMI) >30 kg/m² and pregnancy. The control group consisted of healthy, HIV-negative, age- and sex-matched healthcare workers.

At baseline, month 12 and 24 the following variables were analyzed:
- Clinical assessment: tobacco, ART use, lipid-lowering, antihypertensive drugs, Framingham score, blood pressure, height, weight, waist and hip circumference.
- Laboratory: HIV viral load, CD4 cell count, triglycerides; HDL-c, high density lipoprotein-cholesterol; hs-CRP, high-sensitivity C-reactive protein; ; IL-6, interleukin-6; LDL-c: low density lipoprotein cholesterol; MCP-1, monocyte chemoattractant protein-1 (MCP-1), asymmetric dimethylarginine (ADMA), by ELISA; high-sensitivity C-reactive protein (hs-CRP) by immunocolorimetry; lipoprotein-phospholipase A2 (Lp-PLA2) by 2-thio-PAF.
- Carotid ultrasound: measurement of carotid intim-media thickness (c-IMT) of far wall of left and right common carotid using a semi-automatic software and presence of plaque (focal structure into the arterial lumen of at least 0.5 mm or 50% of the surrounding IMT value or c-IMT ≥1.5 mm) in common, bulb and internal carotid.

RESULTS

1.Demographic, cardiovascular risk and laboratory characteristics of participants

2. Change in lipids at month 12 and 24

3. Change in LDL particles phenotype at month 12 and 24

4. Change in plasma biomarkers and c-IMT at month 12 and 24

CONCLUSIONS

In HIV-infected naïve patients, ART was associated with improvements in LDL particles phenotype and inflammatory/immune biomarkers, reaching values similar to those of the controls, except in hs-CRP. ART may be effective in preventing accelerated atherosclerosis. Biomarkers, mainly those associated with macrophage activation, were associated with lipid disturbances.