Methods: Human serum was incubated with HepG2 cells transduced with EL- or LacZ-Adenovirus (Ad). One portion of LacZ/EL modified serum was depleted from ApoB containing lipoproteins (dser LacZ or dserEL). Modified mouse serum was obtained from mice injected with EL- or LacZ-Ad. Ea.hy926 cells were treated with human modified ser/dser and analysed by Western Blot and HPLC to obtain eNOS and PeNOS protein expressions and NO2 (NO conversion product which reflects NO production) concentration, respectively.

Acetylcholine (Ach)- induced relaxation of norepinephrine pre-contracted mouse aortic rings incubated with depleted EL- or LacZ- modified human or mouse apoB-depleted serum was examined by myography.

Results: Cells treated with EL-modified ser/dser showed decreased NO production and eNOS phosphorylation compared to control LacZ-ser/dser. Myography showed no difference in relaxation of rings treated with human EL/LacZ dser, while rings treated with mouse EL dser showed impaired relaxation compared to control.

Conclusions: Our data indicate that EL-modification impairs the capacity of serum and ApoB depleted serum to induce eNOS activity and NO production in cultured endothelial cells and mouse aortic rings.

EAS16-0139, VASCULAR BIOLOGY: ENDOTHELium AND SMOOTH MUSCLE CELLS.
ULTRASTRUCTURAL STUDY OF ENDOTHELium IN ADVANCED CAROTID ARTERY ATHEROSCLEROSIS

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Objectives: The development of endothelial dysfunction (ED), a precursor of atherosclerosis, has been associated with HIV-infection, and linked with various processes contributing to the plaque unstable structure (namely edema and decomposition of the extracellular matrix, volume of the atheromatosis in the plaque) and a number of ultrastructural changes of the endothelium (size of denudated areas, signs of the alteration in barrier function and protein synthesis, dystrophic and necrobiotic changes of endotheliocytes, weakening of their connections to the subendothelial layer). These above changes are quantitatively assessed and then used for correlation analysis.

Methods: 34 specimens, taken from 7 atherosclerotic plaques in the internal carotid artery, were analyzed using light and transmission electron microscopy; plaque structure, subendothelial layer composition and ultrastructural characteristics of endotheliocytes were quantitatively assessed and then used for correlation analysis.

Results: Observations included: (i) regions of the endothelial denudation; (ii) intercellular gaps; (iii) simplification and loss of cell-cell junctions; (iv) ultrastructural changes such as marked variety of the endotheliocytes size and profile, various degrees of cytoplasm edema or dehydration, distribution of cytoskeletal fibers as well as different number and functional status of organelles. Data suggested a correlation between the aggravation of some processes contributing to the plaque unstable structure (namely edema and decomposition of the extracellular matrix, volume of the atheromatosis in the plaque) and a number of ultrastructural changes of the endothelium (size of denudated areas, signs of the alteration in barrier function and protein synthesis, dystrophic and necrobiotic changes of endotheliocytes, weakening of their connections to the subendothelial layer). Degree of aforementioned changes of the endothelium decreased with an increase of collagenous and elastic fibers quantity in the subendothelial layer.

Conclusions: Preserved endothelial cells of the advanced atherosclerotic plaque displayed pronounced ultrastructural pathology, which differed significantly depending on plaque and subendothelial layer structure.

EAS16-0690, VASCULAR BIOLOGY: ENDOTHELium AND SMOOTH MUSCLE CELLS.
THE EFFECTS OF HIV-INFECTION AND ANTI-RETROVIRAL TREATMENT ON ENDOTHELIAL FUNCTION IN A SOUTH AFRICAN COHORT

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Objectives: The development of endothelial dysfunction (ED), a precursor of atherosclerosis, has been associated with HIV-infection, and linked with use of antiretroviral treatment (ART). In South Africa a fixed dose 1st line (tenofovir, emtricitabine and efavirenz) and 2nd-line (lopinavir and ritonavir) ART combination is currently being utilized. To date, very little is known on the effects of these ART drug combinations on endothelial function. Given that South Africa has the largest ART roll-out programme globally, investigating a possible link between ART and ED may assist in identifying those at high risk for atherosclerosis and future cardiac events.

Methods: Using ultrasound, we assessed brachial flow mediated dilatation (FMD) in 77 HIV-infected individuals [treatment naïve (n=31), 1st-line (n=22) and 2nd-line (n=24) ART] residing near Cape Town. Anthropometric (BMI and waist-hip-ratio) and cardiovascular (lipids, blood pressure (BP) and plasma glucose profiles) measures were obtained.

Results: FMD was not significantly different between the three groups. However, when investigating the potential predictors of ED within the treatment groups, FMD was negatively associated with HDL-cholesterol (p=0.031) and positively associated with diastolic BP (p=0.040) in the 1st-line ART group. Whilst, in the 2nd-line group FMD was negatively associated with C-reactive protein (p=0.003).

Conclusions: In conclusion increased inflammation is associated with decreased endothelial function in individuals on 2nd-line ART. Therefore, M. Pyatachenkov, T. Tishko, A. Sokolov. Military Medical Academy, Clinic of Nephrology and Effferent Therapy, St. Petersburg, Russia

Objectives: Various therapeutic apheresis techniques, e.g. DFPP, are increasingly frequently used successfully in the comprehensive therapy of lipid storage disease patients. However, the effect of these techniques on the adhesion molecules content, which play a key role in the coronary artery disease initiation, is still understudied. The objective of the study was to compare the adhesion molecules removal effectiveness among various fractionators of plasma (FP) in the process of DFPP in the CAD patient after coronary stenting.

Methods: The present study deals with the rejection coefficient (the proportion of the substance, which is checked by FP membrane) in adhesion molecules (sICAM-1, sVCAM-1, sPECAM-1, sE-selectin, sL-selectin, sP-selectin) of different FP in the process of the programmed DFPP treatment in 25 stable CAD patients (average age 58±9 years) in the early postimplantation period of coronary stenting. FP Cascadefflo EC-40W was used in 13 patients, Cascadefflo EC-50 W was used in 12 patients.

Results: The effectiveness of adhesion molecules removal was much higher for FP EC-40 based on all data studied: sP-selectin (74% and 25%), sE-selectin (55% and 20%), sL-selectin (11% and 2%); sICAM-1 (30% and 12%), sPECAM-1 (30% and 19%), sVCAM-1 (41% and 19%).

Conclusions: The procedure of DFPP using FP Cascadefflo EC-40W compared to EC-50W was associated with more pronounced adhesion molecules removal, which can contribute to more effective suppression of neointimal proliferation process. Pleiotropic properties of DFPP can find use for the restenosis prevention in the process of coronary stenting, and this warrants further study.