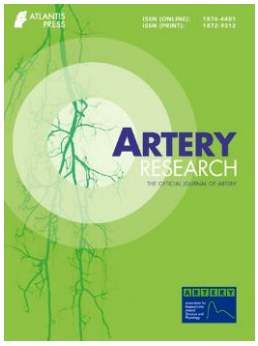

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P191: AORTIC STIFFNESS AND INFLAMMATION IN INFLAMMATORY BOWEL DISEASES: AN INDIVIDUAL PARTICIPANT DATA META-ANALYSIS

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EFFECTS OF RADIOTHERAPY ON LARGE VESSELS IN HODGKIN LYMPHOMA SURVIVORS

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New chemotherapeutic drugs and radiation therapy have significantly improved cancer patient's survival, although the cardiovascular (CV) side effects of cancer treatment are increasingly important. In previous studies, an increased risk of cerebrovascular complications such as stroke and transient ischemic attack was described in patients undergoing neck radiotherapy.
Aim: To evaluate vascular carotid structural (IMT, plaque) and functional (carotid stiffness) damage, and changes in arterial stiffness (Carotido-femoral pulse wave velocity; cf- PWV) in Hodgkin Lymphoma survivors previously treated with radiotherapy.
Patients and methods: We enrolled206 Hodgkin lymphoma survivors (mean age 54 ± 14years, 51%males, mean follow-up of9 ± 6years).CV risk factors were investigated and atherosclerotic carotid damage was assessed by standard carotid ultrasound evaluation for intima-media thickness (IMT) measurement (MeanMax- IMT, CBMax, Tmax; n = 167); in 141 patients radiofrequency-based carotid stiffness analysis (distensibility; distensibility coefficient, DC; compliance coefficient; CC) was also performed.Cf-PWV measurement were obtained in 154 patients.
Results: A significant correlation between radiotherapy dose and: MeanMax-IMT ($r = 0.20$; $p < 0.05$), Tmax ($r = 0.20$; $p < 0.05$), distensibility ($r = 0.24$; $p < 0.05$), DC($r = 0.24$; $p < 0.05$), CC($r = 0.24$; $p < 0.05$) was observed. Patients were divided into 4 groups according to radiotherapy dose (Dose: 20—30; 31—36; 37—42;>42Gy). An increase in Tmax (1.27 ± 0.61, 1.35 ± 0.59, 1.46 ± 0.69, 1.76 ± 1.12 mm, p for trend <0.05) and in the prevalence of carotid plaque (29%, 31%, 47% and 55%, p for trend <0.05) was observed as related to dose-category. One-hundred-seventeen patients received neck irradiation (67 bilateral; 50 unilateral).In unilaterally irradiated patients, MeanMaxIMT was greater in the irradiated side as compared to unirradiated carotid artery and the difference reached statistical significance in the group of patients who received a high radiotherapy dose (0.97 ± 0.35 vs 0.92 ± 0.34 $p < 0.05$).Cf-PWV was significantly greater only in patients that received high dose (>42Gy), as compared to all the other dose groups (9.7 ± 2.3 vs 8.3±2.2,8.0 ± 1.5 and 8.3±1.4, $p < 0.05$).
Conclusions: In this large number ofHL survivors, carotid IMT, plaque prevalence and aortic and carotid stiffness were significantly related with radiotherapy doses. Carotid IMT, carotid and aortic stiffness were significantly higher in the irradiated carotid arteries, but only at doses >42Gy, suggesting that there may be a dose threshold for radiotherapy-induced carotid wall damage.

P189
IDENTIFYING PTPN14-DEPENDENT MECHANISMS THAT INFLUENCE CLINICAL MANIFESTATIONS OF HEREDITARY HEMORRHAGIC TELANGIECTASIA

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Hereditary Hemorrhagic Telangiectasia (HHT) is a genetic disorder caused predominantly by loss of a single allele of *ENG* (HHT1) or *ACVRL1* (HHT2). Global incidence is about 1 in 5,000. Clinical manifestations include cutaneous, mucosal and/or gastrointestinal (GI) tract telangiectases that can cause severe epistaxis or GI bleeding. Some patients (10—50%) develop arteriovenous malformations (AVMs) in the lung, brain or liver. We previously showed that genetic variants of *PTPN14* (Phospho-Tyrosine Phosphatase Non-Receptor Type 14) genetically associate with the presence of lung AVMs. Homozygous loss of *PTPN14* has also been reported to cause lymphedema due to lymph EC hyperplasia.
Other studies, in tumor epithelial cells, show that PTPN14 can dephosphorylate b- catenin, modulate HIPPO signaling and regulate tyrosine kinase receptor turnover through endosomal pathways.
To investigate its role in ECs and its interactions with the endoglin/ACVRL1 axis, we studied the effect of *PTPN14* knock down on differential expression of components of BMP9 and TGF-b signaling pathways in primary human umbilical artery ECs (HUAEC). *PTPN14* expression had no effect on pSmad2/3 or pSmad1/5/8 activation but affected protein levels of VEGFR2 and EphrinB2. PTPN14 may thus act on a network of interacting signaling pathways, including endoglin and ACVRL1, by regulating cell surface receptor presentation and endocytic turnover.
Studies are ongoing to address this issue in greater molecular detail. Elucidating the molecular mechanisms involved should contribute to a better understanding of the molecular pathology of HHT, and the regulation of angiogenesis versus stabilization of the vascular bed.

P190
CARDIOVASCULAR DISEASE IN AXIAL SPONDYLOARTHRITIS

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Objectives: To estimate the state of the brachiocephalic trunk in patients with axial spondyloarthritis (SpA) and the relationship of changes with the clinical manifestations of the underlying disease.
Material and methods: 55 patients with a diagnosis of axial spondyloarthritis were examined. The average age was 35 ± 0.8 years, the duration of the disease was 5 ± 0.45 years. The criterion for exclusion was the presence of clinical manifestations of diseases of the cardiovascular system (CVS). Control group in the amount of 20 people, corresponding to the sex and age, without clinical manifestations of diseases from the musculoskeletal system and CVS. All patients underwent a duplex study of the brachiocephalic trunk.
Results: Investigation of the intima-media vessel complex (IMC) as an indicator of the thickness of the subendothelial layers of the intima and / or muscle layer of the media is an early marker of the atherosclerotic process. The thickness of IMC was higher in patients with axial SpA (0.75 ± 0.05 mm) compared with the control group (0.68 ± 0.08 mm). The incidence of carotid plaque was higher than in the control group (40% vs. 28%, $p < 0.05$). The presence of plaque was most often observed in patients with a longer duration of the disease, with hip joint damage, syndesmophytes, a higher limited functional capacity of the joints in the BASFI and BASMI indices.
Conclusion: The asymptomatic course of cardiovascular damage justifies the need for mandatory duplex research of the brachiocephalic trunk patients with axial spondyloarthritis.

P191
AORTIC STIFFNESS AND INFLAMMATION IN INFLAMMATORY BOWEL DISEASES: AN INDIVIDUAL PARTICIPANT DATA META-ANALYSIS

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Importance: The finding that aortic pulse wave velocity (aPWV) is increased may explain why patients with inflammatory bowel disease (IBD) have an increased cardiovascular risk despite the low prevalence of classic cardiovascular risk factors.
Objective: To determine why these patients have an increased aPWV.
Data sources: A systematic literature search for aPWV in IBD was performed using PubMed, Scopus, Web of Science, and Google Scholar databases.
Study selection: Inclusion criterion was peer-reviewed publications on clinical studies reporting original data.
Data extraction and synthesis: This study followed PRISMA-IPD 2015 guidelines. Data were provided for 4 cohorts in 3 countries (151 participants with ulcerative colitis [UC], 159 with Crohn disease [CD], and 227 controls). Using aPWV, cohort-specific z-scores were calculated after $\log_e$-transform and combined in meta-analysis to form pooled effects using a random- effects model.
Main outcome and measures: The aPWV, a reference measure of aortic stiffness, after adjusting for age, sex, mean blood pressure, known cardiovascular risk factors, and study of origin.
Results: The pooled z-score was 1.2 m/s. The aPWV was dependent on CD (β 0.80 z-score [1.0 m/s], 95% confidence interval 0.61—1.00 z-score, $P < 0.001$)

and UC (β 0.69 z- score [0.8 m/s], 95% confidence interval 0.49—0.88 z-score, $P < 0.001$). In patients with IBD, the aPWV was dependent on disease duration (square root [years], β 0.15 z- score, 95% confidence interval 0.02—0.29 z-score, $P = 0.03$) and white blood cell count (Log_e [billion cells/L], β 0.48 z-score, 95% confidence interval 0.12—0.84 z-score, $P = 0.01$) but not on cardiovascular risk factors and therapy.
Conclusions: The increased aPWV reported in this patient population is dependent on inflammation.

P192
ENDOTHELIAL DYSFUNCTION, ARTERIAL STIFFNESS IN LUNG TRANSPLANTED INDIVIDUALS

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Background: The immunosuppressive treatment after organ transplantation highly contribute to evolve cardiovascular comorbidities like hypertension, hyperlipidemia, diabetes and kidney diseases. The effect of hypertriglyceridemia could cause accelerated atherosclerosis. Previous smoking and excessive inflammatory response could increase the cardiovascular risk on those patients who were transplanted because of end-staged chronic obstructive pulmonary disease. Long term follow up needed on lung transplanted (LuTx) patient with cardiovascular risk assessment and to screen patients with vulnerable cardiovascular diseases. However, the correlation between LuTx patients and arterial stiffness is not investigated in the literature.
Method: We investigated the arterial stiffness parameters in 51 LuTx and 49 healthy individuals. The arterial stiffness parameters were measured with oscillometric method (Tensiomed Arteriograph). Aortic pulse wave velocity (aoPWV), augmentation index (Aix), central systolic blood pressure (cSBP) and aortic pulse wave reflection time (RT) were determined.
Results: We found increased aoPWV and Aix values in lung transplanted (LuTx) patients than in the healthy individuals. Significant higher aoPWV (8.45 vs 7.49 m/s; p = 0.045), and RT (120 vs 134 ms; p = 0,0004) were found. Patients who were transplanted because of COPD and lung fibrosis the aoPWV were significantly higher versus the patient who were transplanted because of cystic fibrosis or pulmonary hypertension.
Conclusion: We strongly recommend the long term cardiovascular follow up on lung transplanted patient, because of the common systemic atherogen effect of the frequent infection and immunsupressive therapy.

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CAROTID ATHEROSCLEROSIS, AORTIC STIFFNESS AND PENILE VASCULAR DAMAGE IN PATIENTS WITH ERECTILE DYSFUNCTION: RELATION TO LOW DENSITY LIPOPROTEIN LEVELS AND STATIN THERAPY

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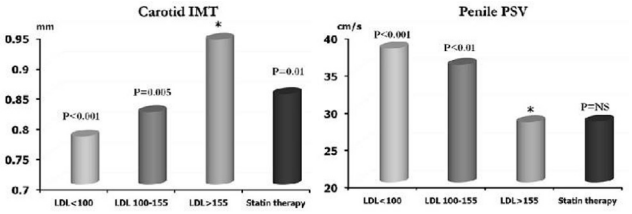
Purpose/Background/Objectives: Aim of the study is to examine the possible differentiation of aortic stiffness, carotid atherosclerosis and penile vascular function among patients with erectile dysfunction (ED) according to cholesterol level and statin therapy.
Methods: We measured carotid intima-media thickness (IMT), carotid-femoral pulse wave velocity (PWV) and penile peak systolic velocity (PSV) 20 min after intracavernous injection of prostaglandin E1 in 356 consecutive ED patients (mean age 57 ± 9 years). Lipid parameters and total testosterone were measured in all patients.
Results: 95 (26.7%) ED patients are treated with statins. The patients not receiving statin therapy (n = 261) were subsequently divided into three groups according to LDL level (group 1: LDL < 100 mg/dl, group 2: LDL: 100—155 mg/dl, group 3: LDL > 155 mg/dl).
Patients with statin therapy and subjects in group 2 have similar mean LDL level. Carotid IMT was higher in patients with LDL >155 mg/dl (group 3) compared to patients treated with statins (P = 0.01) and subjects with LDL: 100—155 mg/dl (P = 0.005) and LDL < 100 mg/dl (left plot, P < 0.001). Post hoc analysis showed that patients treated with a statin and subjects in group 3 had comparable penile PSV and lower mean value compared to that of patients in group 1 and group 2 (right plot).
Carotid-femoral PWV was similar between the studied groups. Testosterone levels were similar between patients treated with a statin and males not receiving hypolipidemic therapy (groups 2 and 3).



Conclusions: Although treated hypercholesterolemic patients exhibited lower atherosclerotic burden compared to untreated individuals with high LDL levels, penile blood inflow remains significantly impaired.

P194
CARDIOVASCULAR RESPONSES TO INCREASED PRESSURE DURING HEALTHY PREGNANCY

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A long-standing question is whether pregnant females, who bear an increased biological stress, experience exacerbated cardiovascular responses during physiological challenge. At rest, pregnant females have reduced blood pressure, increased cardiac output, heart rate and stroke volume (1), with reported reductions in cardiac contraction and relaxation (2). Increased cardiac work may potentially exasperate impairments in function observed at rest. The aim of this study was to investigate the cardiovascular responses to an isolated increase in pressure in healthy nulliparous non-pregnant, primiparous pregnant (22—26 weeks gestation; $n = 14$) and primiparous postpartum (12—16 weeks after delivery; $n = 13$) females.
The pressure challenge was elicited through a sustained isometric hold for approximately 5 minutes at 30% of maximum using an externally loaded handgrip dynamometer. Echocardiographic images were collected to measure cardiac volumes and mechanics. Blood pressure was monitored continuously using finger photoplethysmography. Analyses of covariance, with baseline measures as covariate, were completed to determine differences between groups ($P = <0.05$). *Post hoc* analyses were performed with a Bonferroni adjustment.
There were no significant differences between groups in cardiac volumes or blood pressure during the challenge however; pregnant females had a greater heart rate (68 ± 2 *versus* 62 ± 2 beats·min^{-1}) and longitudinal strain ($-20.6 \pm 1.0\%$ *versus* $-17.1 \pm 0.7\%$) than non-pregnant females.
Increased longitudinal strain and heart rate are likely result of increased contractility mediated by greater myocardial sympathetic innervation (3). In healthy pregnant females, increased pressure does not result in impaired