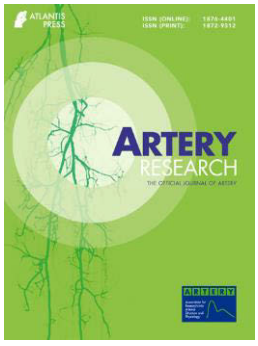

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P30: A 12-WEEK EXERCISE TRAINING PROGRAM REDUCES ENDOTHELIAL DAMAGE IN RESISTANT HYPERTENSION

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inhibitors lead to hypertension in 30-80% patients. Reduced nitric oxide synthase activity and increased vascular resistance have been proposed as potential mechanisms. We aimed to assess these mechanisms in oncology patients receiving VEGF inhibitor, pazopanib (NCT01392352).
Methods: 27 normotensive patients received pazopanib 800mg od. Endothelial function was assessed using forearm plethysmography with intra-arterial infusion of Acetylcholine (ACh), Sodium Nitroprusside (SNP) and L-N-monomethyl-arginine (L-NMMA). Also, Blood Pressure (BP), Pulse Wave Velocity (PWV), Cardiac Output (CO), and Peripheral Vascular Resistance (PVR) and capillary density in the eye were assessed. All measurements were taken at baseline, 2 and 12 weeks after initiation of the treatment.
Results: Following 12 weeks of treatment, systolic BP rose by 12 (95% CI:4–19) mmHg; $P = 0.003$, diastolic by 10 (95% CI:5–15) mmHg; $P < 0.001$, PWV by 1.3 (95% CI:0.3–2.2) m/s; $P = 0.01$, PVR by 11.1 (95% CI:7.7–14.6) mmHg*L/min; $P < 0.001$. Capillary density in the sclera reduced by 12 ± 18%; $P = 0.02$. Forearm blood flow response to ACh improved ($P < 0.001$), whereas SNP and L-NMMA responses were unchanged. A post-hoc colorimetric assay revealed in whole blood from healthy volunteers that pazopanib inhibited acetylcholinesterase activity by 35%.
Conclusion: Unexpectedly, pazopanib led to an increase in ACh response, but this is most likely due to the inhibition of acetylcholinesterase activity by pazopanib. Interestingly, we found that PVR was increased and capillary density reduced by the treatment, suggesting that capillary rarefaction could be one of the mechanisms behind VEGF inhibition induced hypertension.

P30
A 12-WEEK EXERCISE TRAINING PROGRAM REDUCES ENDOTHELIAL DAMAGE IN RESISTANT HYPERTENSION

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Background: Resistant Hypertension (RH) is associated with an increased risk of cardiovascular events and poor prognosis. Exercise training studies in RH patients have shown promising outcomes, nonetheless, none determine the impact of exercise on endothelial damage and repair. Circulating endothelial cells (CECs) are a reliable indicator of vascular damage and dysfunction. Recent studies in hypertension suggest that increased levels of endothelial progenitor cells (EPCs), a marker of endothelial repair, are related to increased CECs in order to compensate endothelial damage. Purpose: This study aimed to determine the effect of 12-week aerobic exercise program on the percentage of EPCs and CECs in RH patients.
Methods: Patients with RH were randomized to a 12-week aerobic exercise program (3 xs/week) ($n = 13$) and a usual care control group ($n = 8$). Outcome measures included clinical data, ambulatory blood pressure data and circulating levels of EPCs, hematopoietic stem cells (HSC) and CECs, quantified by flow cytometry. (ClinicalTrials.gov: NCT03090529).
Results: Baseline characteristics were similar between groups, including the number of antihypertensive drugs (5.0 ± 0.9 vs. 4.8 ± 0.7, $p = 0.517$). After 12 weeks, no significant changes were found in the levels of HSCs in both groups. The levels of CECs decreased in the exercise group [0.0073 (0.0016)% to 0.0058 (0.0029), $p = 0.019$]; no changes were observed in the control group. EPC's decreased only in the exercise group [0.0071 (0.0027)% to 0.0052 (0.0037)%, $p = 0.046$].
Conclusions: Exercise training reduces endothelial injury/damage (reduced CECs levels) in RH patients, a specific group who is a challenge for clinicians as the available treatment options have reduced success.

P31
DO TREATMENT INDUCED CHANGES IN ARTERIAL STIFFNESS AFFECT LEFT VENTRICULAR STRUCTURE AND FUNCTION? – A META-ANALYSIS

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Background: Vascular research demonstrated that pulse wave velocity (PWV), a measure of arterial stiffness, is inherently blood pressure-dependent. Considering the hypothesised pathophysiological chain of increased arterial stiffness leading to increased blood pressure load with consequent left ventricle hypertrophy (LVH) development, we conducted a systematic review of antihypertensive and lifestyle intervention studies to determine the association between on the one hand changes in arterial stiffness and blood pressure, and on the other hand changes in LV mass (LVM).
Methods: Using PubMed, EMBASE, Cochrane and Web of Science, we identified 23 studies, containing 2573 patients. Studies reported changes in arterial stiffness (assessed by means of PWV), systolic- and diastolic blood pressure (SBP, DBP), and LVM index (LVMI), respectively.
Results: Statistically significant reductions in SBP, PWV and LVMI were reported in 16, 14, and 20 studies, respectively. Pooled analysis of studies showed that the proportion in SBP reduction did not correlate significantly to the proportion in reductions of the other two variables. On the other hand, we found a significant positive correlation ($r = 0.58$, $p = 0.007$) between arterial stiffness and LVM regression, expressed as a relevant reduction in LVMI of 6.5 g/m^2 per 1.0 m/s reduction in PWV.
Conclusions: Our findings provide evidence that a decrease in arterial stiffness is associated with regression of LVH. To investigate whether there exists a causal relation between LVH due to arterial stiffness increases and in turn blood pressure load increases, future studies should strive for a multiple followup design and use of blood pressure-independent or -corrected stiffness indices.

P32
DETERMINING CARDIAC AND ARTERIAL CONTRIBUTIONS TO CENTRAL PULSE PRESSURE

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We examined the ability of a simple reduced model comprising a proximal characteristic impedance linked to a Windkessel element to accurately predict central Pulse Pressure (PP) from aortic blood flow, verified that parameters of the model corresponded to physical properties, and applied the model to examine PP dependence on cardiac and vascular properties. PP obtained from the reduced model was compared with theoretical values obtained in silico and measured values in vivo. Theoretical values were obtained using a distributed multisegment model in a population of virtual (computed) subjects in which cardiovascular properties were varied over the pathophysiological range ($n = 3,095$). In vivo measurements were in normotensive subjects during modulation of physiology with vasoactive drugs ($n = 13$) and in hypertensive subjects ($n = 156$). Central PP derived from the reduced model agreed with theoretical values (mean difference ±SD, -0.09 ± 1.96 mmHg) and with measured values (means differences -1.95 ± 3.74 and -1.18 ± 3.67 mmHg for normotensive and hypertensive subjects, respectively). Parameters extracted from the reduced model agreed closely with theoretical and measured physical properties. Central PP was seen to be determined mainly by total arterial compliance (inversely associated with central arterial stiffness) and ventricular dynamics: the