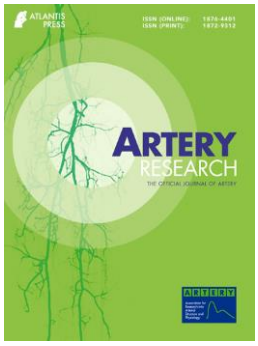

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P5.18
BRONCHOCONSTRICTION DOES NOT SIGNIFICANTLY ALTER CENTRAL HAEMODYNAMICS IN HEALTHY YOUNG ADULTS

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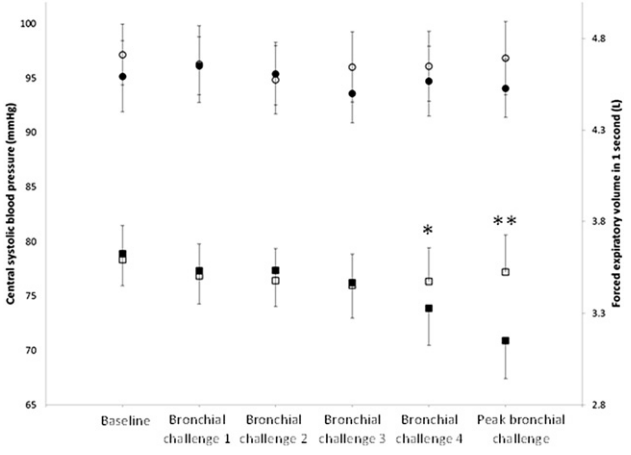
Background: Cardiovascular disease is the most frequent cause of death in people with chronic respiratory disease. Whether this association is due to shared comorbidities or adverse respiratory function exerting detrimental cardiovascular effects is unknown. This study aimed to determine the cardiovascular effect of methacholine-induced acute airway obstruction.
Methods: Fifteen healthy young adults (aged 22.9±2.5 years; 4 male; mean±SD) underwent a bronchial challenge test in which they were randomized in a blinded cross-over design to receive nebulized methacholine inhalation in serially increasing concentrations (from 0.39 to 25 mg/ml) or saline (0.9%; control) on two separate days. Airflow obstruction was assessed by forced expiratory volume at second (FEV1) and cardiovascular effects by brachial BP (oscillometry), central BP, augmentation index (AIx) and aortic stiffness (applanation tonometry).
Results: Methacholine caused a significant decrease in FEV1 (bronchoconstriction) from baseline to peak inhalation compared with saline (-0.48±0.34 vs -0.07±0.16 L; $p<0.001$), but no significant between-group change in aortic stiffness (0.2±1.3 vs 0.8±1.8 m/s; $p=0.20$), AIx (1.6±7.0 vs 3.7±10.2%; $p=0.49$), brachial SBP (-3.3±7.6 vs -4.7±5.7 mmHg; $p=0.59$), central SBP (-1.1±5.2 vs -0.3±5.5 mmHg; $p=0.73$), or heart rate (0.4±7.1 vs -0.8±6.6 bpm; $p=0.45$). See figure for FEV1 and central SBP responses to inhaled methacholine (*$P=0.012$, **$P<0.0001$).
Conclusions: Methacholine-induced bronchoconstriction does not change cardiovascular function, as assessed by aortic stiffness, brachial and central BP in healthy young adults. A comparison of the responses in people with airway disease would be of interest and may help to elucidate the connection between cardiovascular and respiratory disease.



P5.19
MATERNAL HEMODYNAMICS AT 11−13 WEEKS OF GESTATION AND THE RISK OF PRE-ECLAMPSIA

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Background: Women who develop preeclampsia (PE) are at increased risk of cardiovascular disease and stroke in the subsequent decades. In individuals with cardiovascular disorders there is increased central aortic systolic blood pressure (SBP_{Ao}) and arterial stiffness, assessed by pulse wave velocity (PWV) and augmentation index (AIx). The aim of this screening study was to examine the potential value of assessment of $SBP_{Ao,}$ PWV and AIx at 11-13 weeks' gestation in identifying women who subsequently develop PE.
Methods: This was a screening study for PE in singleton pregnancies at 11^{+0} - 13^{+6} weeks' gestation. Maternal history and characteristics were recorded and PWV, AIx and SBP_{Ao} were measured by the Arteriograph. We compared these parameters in those that developed PE (n=146) with unaffected controls (n=4,436) and examined their performance in screening for PE.
Results: In the PE group, compared to unaffected controls, there was an increase in PWV (1.12 vs 1.00 MoM, $p<0.0001$), AIx-75 (1.06 vs 1.00 MoM, $p<0.0001$) and SBP_{Ao} (1.10 vs. 1.00 MoM, $p<0.0001$). In screening for PE by a combination of maternal variables and $\log_{10}$ AIx-75 MoM, $\log_{10}$ PWV MoM and $\log_{10}$ SBP_{Ao}, the estimated detection rate was 61.6 (95% CI 51.8-70.5), at a false-positive rate of 10%.
Conclusion: A high proportion of women who develop PE have increased SBP_{Ao} and arterial stiffness that is apparent from the first-trimester of pregnancy.

P5.20
ADDITIVE EFFECT OF CARDIOVASCULAR RISK FACTORS ON CAROTID AND AORTIC STIFFNESS IN ESSENTIAL HYPERTENSIVE PATIENTS

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Background: The role of other cardiovascular risk factors (RF) on top of hypertension in worsening arterial elastic properties is still unknown. The aim of the study was to evaluate whether cardiovascular RF can influence aortic and carotid stiffness in essential hypertensive patients.
Methods: 314 hypertensive patients and 110 age- and sex-matched healthy subjects were recruited. Carotid-to-femoral PWV and carotid pulse pressure were obtained by applanation tonometry, and carotid stiffness (CS) by automated system for ultrasound sequence images "Carotid Studio". Medical history, physical examination, and blood exams were used to identify the following RF: family history of premature cardiovascular disease, smoking, previous cardiovascular events, diabetes mellitus, obesity, hypercholesterolemia, hypertriglyceridemia, low HDL, metabolic syndrome, and chronic renal failure.
Results: Hypertensive patients had higher PWV and CS compared to healthy subjects (9.4 vs 7.4 m/s and 6.9 vs 6.2 m/s, $p<0.0001$ for both). PWV and CS were classified as "increased" when greater than 90^{th} percentile, calculated on the healthy subjects sample. Among hypertensives, age- and sex-adjusted multiple logistic regression, including all the above-mentioned RF, demonstrated that only diabetes mellitus (OR 5.4, CL95% 2.6-11.2) and chronic renal failure (OR 7.7, CL95% 2.2-25.6) are independently associated to an increased PWV while only diabetes mellitus is independently associated to an increased CS (OR 3.2, CL95% 1.4-7.1).
Conclusions: In hypertensive population, the additive presence of diabetes mellitus is associated with a further carotid and aortic stiffening, while the presence of chronic renal failure is associated to a further increased PWV. The other cardiovascular RF seem to exert a marginal role, when added to arterial hypertension.

P5.21
CHRONIC HYPOXEMIA PER SE INDUCES SYSTEMIC VASCULAR DYSFUNCTION IN HUMANS

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Cardiovascular (CV) morbidity and mortality are increased in patients suffering from diseases associated with chronic hypoxemia. The contribution of hypoxemia per se has proven difficult to determine, because these patients often present several additional CV risk factors. Chronic mountain sickness (CMS) is characterized by chronic hypoxemia, affects subjects with a low CV risk profile and thereby provides a unique opportunity to study the independent effects of chronic hypoxemia on vascular function. We measured arterial oxygen saturation (SaO_2), flow-mediated dilation (FMD) of the brachial artery, carotid-femoral pulse wave velocity (PWV) and carotid intima-media thickness (IMT) in 23 CMS patients and 27 controls permanently living at 3600 m. The main new finding was that CMS patients (SaO_2 83±3 vs. 90±3% in controls, $P<0.0001$) displayed marked systemic vascular dysfunction as evidenced by decreased FMD (4.6±1.2 vs.