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5.7: AORTIC PULSE WAVE VELOCITY INCREASES AFTER 2 YEARS IN PATIENTS WITH COPD: DATA FROM THE ARCADE STUDY

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Methods: In this prospective, single center observational study, 61 patients with cancer were included. Peripheral blood pressure and aortic pulse wave velocity (PWV) were performed at baseline and then every two weeks for two months after the initiation of treatment by sunitinib or sorafenib (V0 to V4). Blood samples were obtained from V1 to V4 for the pharmacokinetic study. Concentrations were determined by HPLC and standardized to combine both drugs (Z-score, mean=0, SD=1). Statistical analysis was performed through a robust stepwise regression analysis and Cox regression analysis.

Results: Mean age was 59(14), mean SBP 127(20) mmHg. At V2, mean BP increased by 5(14) mmHg. Determinants of PWV increase were high AAD blood concentration and mean BP increase (for 1 SD, +0.4 m/s and +0.3m/s respectively, $p<0.01$). High concentration of AAD during follow-up was associated with a lesser cancer progression and mortality (for 1SD increase, HR: 0.60 [0.38-0.97] and HR: 0.38 [0.19-0.79] respectively, $P<0.05$, figure 1). High AAD and low PWV increase are associated with the lowest cancer progression.

Conclusion: Large arteries stiffening observed under AAD is proportional to the intensity of exposure to AAD independently of blood pressure increase. Patients under exposed to AAD are at higher risk of disease progression and mortality.

5.6

AORTIC IS SUPERIOR TO BRACHIAL AMBULATORY BLOOD PRESSURE MONITORING FOR THE DETECTION OF EARLY DAMAGE AT THE HEART AND THE CAROTID ARTERY BUT NOT AT THE RETINAL MICROCIRCULATION: THE NON-INVASIVE AORTIC AMBULATORY BLOOD PRESSURE MONITORING FOR THE DETECTION OF TARGET ORGAN DAMAGE (SAFAR) STUDY

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Introduction: Preliminary evidence suggests the superiority of office aortic (a) blood pressure (BP) over brachial (b) in the management of arterial hypertension. The 24-hour ambulatory blood pressure monitoring (ABPM) is regarded as the optimal method for assessing cardiovascular (CV) risk. The non-invasive 24-hour aABPM is now feasible with validated operator independent brachial cuff-based oscillometric devices.

Objective: To examine whether aABPM is superior to bABPM for the early detection of cardiac and/or arterial damage in hypertensives.

Design and method: The SAFAR study is an ongoing cross-sectional observational study assessing heart function and structure, arterial (carotid, femoral and lower limb) atheromatosis, arterial stiffness (carotid and aortic), arterial hypertrophy (carotid) and retinal microcirculation in individuals' referred for BP evaluation.

Results: In consecutive individuals referred for BP evaluation the aABPM had greater ability than bABPM to detect both left ventricular hypertrophy and diastolic dysfunction (n=229, area under the curve: 0.74 versus 0.69, $p=0.004$ and 0.69 versus 0.63, $p=0.001$, by c-statistics respectively), common carotid intimal-medial thickness greater than 0.9 mm (n=490, 0.69 versus 0.62, $p=0.009$), but not narrowed retinal arteries assessed by central retinal arteriolar equivalent in fundus photography, (n=402 eyes, 0.62 versus 0.61, $p=ns$).

Conclusions: aABPM is able to detect better than bABPM an early local damage at the heart and the nearby conduit arteries, but not at the distal retinal microcirculation.

5.7

AORTIC PULSE WAVE VELOCITY INCREASES AFTER 2 YEARS IN PATIENTS WITH COPD: DATA FROM THE ARCADE STUDY

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Objectives: Patients with COPD have increased risk of cardiovascular (CV) events and mortality beyond that attributable to smoking. However, there have been no longitudinal studies of arterial stiffness in COPD. The Assessment of Risk in Chronic Airways Disease Evaluation (ARCADE) aims to study CV risk factors in COPD and controls, free from respiratory disease, longitudinally. We hypothesised that patients with COPD would have increased Aortic pulse wave velocity (AoPWV) over 2 years.

Methods: At baseline, AoPWV was measured using the SphygmoCor device in 525 patients with COPD and 150 controls. Lung function (Forced expiratory

volume in 1 second (FEV1) and Forced vital capacity (FVC)), BMI, blood pressure (BP) and systemic inflammation (HsCRP) was also measured. These were repeated after 2 years.

Results: At baseline, patients and controls were similar in age, gender and BMI, but patients had greater PWV, systolic and mean arterial BP, heart rate and HsCRP (all $p<0.05$). Thus far 200 patients with COPD have completed the 2 year follow-up assessment. Patients had a mean AoPWV increase of 0.5 m/s (95%CI 0.25-0.71, $p<0.001$), despite no change in central mean arterial BP. In addition, lung function declined ($p<0.05$) and HsCRP remained high.

Conclusions: The 2 year AoPWV increase in COPD was independent of traditional risk factors suggesting an alternative mechanism for aortic stiffness in COPD. Further longitudinal assessments of a control group will inform the understanding of the development of arterial stiffness and may indicate possible therapeutic targets.

Poster Abstract Presentations

P1.1

ANTI-ANGIOGENIC TREATMENT IN CANCER PATIENTS CAUSES ARTERIAL DILATION AND STIFFENING BEYOND THE BLOOD PRESSURE EFFECT

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Introduction: Anti-angiogenic treatment (AAT) prescribed in cancer patients often induces hypertension and is associated with increased pulse wave velocity (PWV). PWV is known to depend on blood pressure (BP). Therefore, we assessed whether AAT changes PWV beyond an estimated first-order BP effect.

Methods: We obtained carotid artery systolic and diastolic cross-sectional areas (echo-tracking) and corresponding BPs in 17 cancer patients with metastatic solid tumours at baseline, and after 3 weeks of treatment (22.1 ± 3.2 days) with sorafenib, sunitinib or bevacizumab. For each patient, we derived local PWV (Bramwell-Hill) and a single-exponential P-A curve. Based on baseline P-A curves and measured follow-up pressures, we estimated the BP-induced PWV change at follow-up. By comparing estimated and measured changes in PWV at follow-up, we assessed the PWV increase beyond the BP effect. In the same way, we assessed whether diastolic cross-sectional area (A_d) changed beyond the BP-induced amount.

Results: Based on the increase in SBP/DBP from (mean \pm SD) $115 \pm 15/70 \pm 8$ mmHg at baseline to $126 \pm 13/78 \pm 10$ mmHg at follow-up, follow-up PWV was an estimated 7.2 ± 1.0 m/s, whereas measured PWV was higher at 7.8 ± 1.7 m/s ($p=0.068$). Measured follow-up A_d markedly increased beyond the estimated pressure dilation (from 38.1 ± 9.5 mm² to 41.1 ± 10.6 mm², $p=0.034$).

Conclusion: AAT increases carotid PWV and cross-sectional area beyond the BP effect. While AAT is known to cause peripheral arterial vasoconstriction, this is not the case in the carotid artery. This finding may be explained by the deleterious influence of AAT on carotid vasa vasorum, possibly causing smooth muscle cell hypoxia and thereby wall stiffening (Stefanadis et al., Circulation 1995).

P1.2

ATHEROMATOSIS, ARTERIOSCLEROSIS AND DETERIORATION OF CARDIAC STRUCTURE AND PERFORMANCE; THE PIVOTAL CONTRIBUTION OF MEDITERRANEAN DIET IN CARDIOVASCULAR HEALTH

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Purpose: Atheromatosis and arteriosclerosis applied to changes in the intima and media vessel wall respectively, as part of the atherosclerotic process. Mediterranean diet, promoting olive oil and fruits consumption, contributes to cardiovascular disease prevention. Aim of our study is to investigate whether left ventricular (LV) and peripheral vascular parameters associate to adherence to the Mediterranean dietary pattern.

Methods: 75 males (56 ± 11 years) underwent cardiac ultrasound examination. Doppler diastolic parameters (E/A, E' / E'), LV mass (LVM) and LV mass index (LVMI) were obtained. Diameter of the ascending aorta was assessed and aortic distensibility was calculated. All patients underwent carotid-