3.4: A CLINICAL SCORE TO PREDICT ELEVATED ARTERIAL STIFFNESS: DERIVATION AND VALIDATION IN 3,943 HYPERTENSIVE PATIENTS

Panagiotis Xaplanteris, Charalambos Vlachopoulos, Athanasios Protogerou, Konstantinos Aznaouridis, Dimitris Terentes-Printzios, Antonis Argyris, Nikolaos Tentolouris, Petros Sfikakis, Dimitris Tousoulis

conventional risk factors and baseline renal function). These associations remained unchanged after further adjustments for central artery stiffness or traditional central haemodynamic parameters. No other RPA-parameters exhibited significant associations.

Conclusions: These findings demonstrate that baseline INTPR is independently associated with the eGFR reduction in older adults, suggesting that INTPR may play a role in the functional decline of the kidneys.

3.3

ROLE OF ARTERIAL STIFFNESS AND BLOOD PRESSURE VARIABILITY IN THE DEFINITION OF SHATS (SYSTEMIC HEMODYNAMIC ATHEROTHROMBOTIC SYNDROME)

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Background: CV risk exponentially increases as the number of damaged organs increases The Systemic Hemodynamic Atherosclerotic Syndrome (SHATS) represents a novel conceptualization of the CV continuum focusing on simultaneous multi-organ alteration. This is the first study operationally defining SHATS and aimed at identifying its determinants.

Methods: Left Ventricular Hypertrophy (echocardiography), Common Carotid Artery plaque and increased thickness (ultrasound), and Chronic Kidney Disease (estimated Glomerular Filtration Rate) indexed selective target organ damage. SHATS was operationally defined as their simultaneous presence in a patient. PWV was measured by Sphygmocor® and BP variability by 24 h ABPM.

Results: SHATS affected 19.9% of the 367 studied subjects. Subjects with SHATS had a similar prevalence in diabetes mellitus, but a greater prevalence of very stiff artery (84.9 vs 64.3 %, $p < 0.01$) and use of antihypertensive medications. In the presence of similar office BP, SHATS was associated with higher 24 h SBP and lower 24 h DBP (a greater pulsatile pressure!), reduced nighttime SBP fall, and a twofold greater prevalence of reverse dipper status (48.2 vs 20.2 %, $p < 0.001$). BMI (positive correlation) and DBP (negative correlation) were the only traditional CV risk factors significantly associated with the odds of having SHATS. Very stiff artery and BP variability were significant independent determinants of SHATS, with highly predictive accuracy.

Conclusion: SHATS, the simultaneous damage of multiple target organs, may easily operationally defined. Very stiff artery and BP variability represent key factors for SHATS. The present results support the hypothesis of SHATS as a systemic condition, needing further characterization.

3.4

A CLINICAL SCORE TO PREDICT ELEVATED ARTERIAL STIFFNESS: DERIVATION AND VALIDATION IN 3,943 HYPERTENSIVE PATIENTS

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Purpose/Background/Objectives: Aortic stiffness assessed by carotid-femoral pulse wave velocity (PWV) is an important predictor to gauge the overall risk of hypertensive patients; nonetheless, it is underutilized in everyday practice. We derived a simple scoring system based on clinical variables that can identify patients with a priority for measurement of PWV, i.e. those with elevated PWV (≥ 10 m/sec) and at higher risk for events.

Methods: Patient data from three outpatient clinics (n = 3,943) were used to form a derivation, internal and external validation cohort. For derivation, independent predictors of high PWV from a binary logistic regression model were dichotomized and implemented in a clinical prediction scoring system with the acronym SAGE (office systolic blood pressure ≥ 160 mmHg: 4 points,

age ≥ 60 years: 4 points, glycemia [blood glucose ≥ 126 mg/dl]: 1 point, eGFR ≤ 60: 2 points).

Results: Its performance was validated at the internal and external validation cohorts with c-statistics being 0.781 (95% CI: 0.753−0.808) and 0.718 (95% CI: 0.682−0.755) respectively (Figure 1). A cut-off of 5 points to identify patients with high PWV in the external validation cohort yielded a positive predictive value, negative predictive value, sensitivity and specificity of 60.7%, 84.8%, 51.9% and 78.3% respectively.

Conclusions: The SAGE score that takes into account easily measured clinical variables (systolic blood pressure, age, glucose and eGFR) can be used to predict elevated levels of PWV and prioritize its measurement in specific patients. Its use will result in greater acknowledgement of the role of aortic stiffness and aid physicians in implementing it in clinical practice.
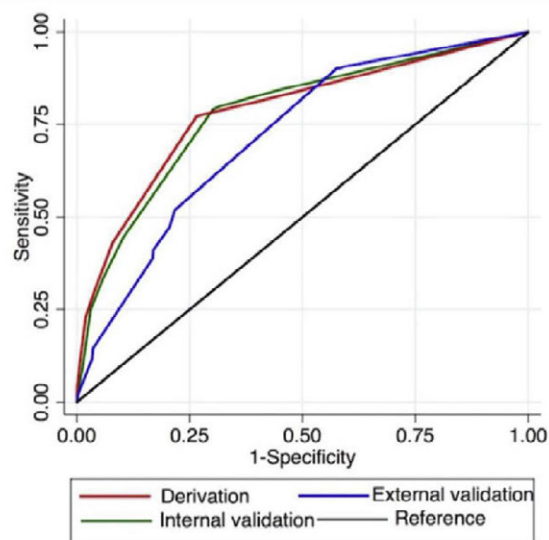
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3.5

CUFF BLOOD PRESSURE IS PROGRESSIVELY MORE BIASED WITH INCREASING AGE: INDIVIDUAL PARTICIPANT LEVEL ANALYSIS FROM THE INSPECT CONSORTIUM

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