Conclusions: Results: Comparing the genotypic and allelic frequencies of the studied polymorphisms, no differences were found between G1 and G2. In general, patients with genotype AA of AQP3 had higher levels of s-fll1 (p = 0.005) and VEGF-C (p = 0.048). For AQP7, genotype TT was associated with higher levels of mean platelet volume (p = 0.049) and lower levels of creatinine (Cr) (p = 0.023).

Elevated levels of neutrophils (N) (p = 0.017) and potassium (p = 0.001) was observed in genotype AA of HPSE.

For G1 was observed an increased level of: s-fll1 (p = 0.022) and VEGF-C (p = 0.044) associated with genotype AA of AQP3; Cr in allele C of AQP7 (p = 0.018), N in genotype CC of AQP7 (p = 0.017). For G2 was observed: higher levels of leucocytes in allele C of AQP3 (p = 0.016) and angiotensin-converting enzyme activity (ACE1) in allele T of AQP7 (p = 0.033).

Conclusions: AQP3, AQP7 and HPSE polymorphisms appear to modulate some biochemical parameters relevant to lymphangiogenesis associated with cardiovascular risk in a sample of patients with psoriasis.

HEMATOLOGICAL BIOMARKERS ASSOCIATED WITH INFLAMMATION AND CARDIOVASCULAR RISK IN PSORIASIS SEVERITY

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Objective: Psoriasis is a chronic inflammatory disease characterized by abnormal proliferation of keratinocytes and infiltration of immune cells and is associated with increased cardiovascular risk. Psoriasis Area and Severity Index (PASI) is a clinical tool used to assess the severity of psoriasis. Circulating biomarkers, such as those of complete blood count (CBC) derived ratios such as platelet-lymphocyte (PLR) and lymphocyte-monocyte (LMR), have been shown to be associated with autoimmune diseases and have been identified as indicators of systemic inflammation surrogate biomarkers. This study aims to evaluate the impact of CBC biomarkers on psoriasis and their clinical severity (PASI).

Design and method: Sixty-three psoriasis patients with a mean age of 52.50 ± 12.81 years. Sociodemographic, hemodynamic and routine blood laboratory data were collected. Patients were stratified based on PASI: < 5 (Group I) and > or equal to 5 (Group II).

Biochemical parameters were determined in serum according to standardized methods. For statistical analysis SPSS program was used and a significant value for p < 0.05 was adopted.

Results: Compared patients between the group I and II it was observed higher levels in this last group of: hemoglobin (p = 0.049), mean corpuscular hemoglobin concentration (p = 0.027), leucocytes (p = 0.012), neutrophils (p = 0.006), erythrocyte sedimentation rate (p = 0.032), Gamma-glutamyltransferase (p = 0.001), alkaline fosfatase (p = 0.046), triglycerides (p = 0.038), PLR (p = 0.012) and lower values of: lymphocytes (p = 0.010), LMR (p = 0.015), cholesterol-HDL (p = 0.003) and Necessity Factor alpha (p = 0.030).

Conclusions: Routine CBC, derived indices and biochemical parameters related to inflammation and cardiovascular risk appear to be inexpensive and easily accessible biomarkers to psoriasis severity.

INCREASED PULSE WAVE VELOCITY AND ASSOCIATED FACTORS IN BRAZILIAN HYPERTENSIVE PATIENTS

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Objective: The increase in pulse wave velocity (PWV) reflects arterial stiffness and indicates an increased risk of cardiovascular disease (CVD). Several factors have been associated with increased PWV in different populations and some of them are poorly studied or have controversial results. The objective of this study was to identify the sociodemographic, laboratory and blood factor

associated with the increase in PWV in participants of the 1 Brazilian Registry of Hypertension (1RBH).

Design and method: Cross-sectional, multicenter and national study with data taken from the baseline of the 1 RBH. Participants with central blood pressure measured were nyalys. A questionnaire was applied with demographic data, personal medical history, lifestyle and biochemical tests. The PWV value considered as changed was > or = 10 m/s. Statistical nyalyses were performed using Stata 15, comparisons established with chi-square and correlations with Spearman or Pearson tests, p < 0.05 adopted.

Results: 44 participants were evaluated: 62.5% women, 63.8 ± 14.4 years, PWV 9.5 ± 2.2 m/s and 40.7% had PWV > or = 10 m/s. Higher frequency of altered PWV was presented in those aged > or = 60 years (62.8%) and with > or = three cardiovascular risk factors (p < 0.001). Age (r = 0.907), central systolic blood pressure (SBP) (r = 0.223), peripheral SBP (r = 0.237) and HDL (r = 0.240) were correlated with PWV.

Conclusions: We identified a higher frequency of PWV > or = 10 m/s in patients with 60 years or more, patients with three or more risk factors and a positive correlation of age, PASc, PASp and HDL with PWV in hypertensive patients of the 1 RBH.

COMBINED EXOSOMAL AND PLASMA NON-CODING RNA SIGNATURE ASSOCIATED WITH URINARY ALBUMIN EXCRETION IN HYPERTENSION

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Objective: Non-coding RNA (ncRNA), released into circulation or packaged into exosomes, play important roles in many biological processes in the kidney. The purpose of the present study is to identify a common ncRNA signature associated with early renal damage and its related molecular pathways by constructing a RNA-based transcriptional network.

Design and method: This is an observational case-control study which included 43 hypertensives, twenty-one patients with essential hypertension and twenty-two without persistent elevated urinary albuminuria (UAE) (higher or equal to 30 mg/g urinary creatinine). Three individual libraries (plasma and urinary exosomes and total plasma) were prepared from each hypertensive patient for ncRNA sequencing analysis. Next, a RNA-based transcriptional regulatory network was constructed.

Results: The three RNA biotypes with the greatest number of differentially expressed transcripts were long-ncRNA (lncRNA), microRNA (miRNA) and piwi-interacting RNA (piRNA). We identified a common 24 ncRNA molecular signature related to hypertension-associated albuminuria, of which lncRNA was the most representative. In addition, the transcriptional regulatory network analysis showed five IncRNA (LINC02061, BAALC-AS1, FAM230B, LINC01484), and the mir-301a-3p to play a significant role in network organization and to target critical pathways regulating filtration barrier integrity, tubule reabsorption and systemic endothelial dysfunction.

Conclusions: Our study found a combined ncRNA signature associated with albuminuria, independently of biofluid origin (urine or plasma, circulating or in exosomes) that identifies a handful of potential targets involved in filtration barrier, tubule reabsorption and endothelial function that may be utilized to treating hypertension-associated albuminuria and cardiovascular damage progression.

MAJOR IMPACT PREDICTION CARDIOVASCULAR RISK IN YOUNG ADULTS

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Objective: Apparently healthy young adults may have risk factors associated with arterial hypertension (HBP) and atherosclerosis. The objective was to evaluate the presence of HBP, obesity and other anthropometric or metabolic cardiovascular (CV) risk parameters in young adults and their association to inflammation connected blood count parameters, as possible earlier determinants for the path of CV future disease.

Design and method: A sample of 250 students (76 men, 174 women; aged 22.1 ± 2.79 years; 94.8% Caucasians; 82.3% eutrophic) was studied. Body Mass Index (BMI Kg/m²), waist circumference (WC cm) and blood pressure (BP mmHg) were measured according to standard methods. Blood count parameters, glucose, cholesterol, HDL and triglycerides (mmol/L) determined according to standard hospital laboratory. Statistics: t-student, ANOVA or equivalent non-parametric, Chi-square and Pearson/Spearman correlations according normality distribution.

Results: Most subjects (91.5%) had normal BP (mean ± SD systolic 116.7 ± 14.0; diastolic 69.6 ± 9.4). HBP frequency showed no differences between gender (p = 0.154), but an association between BMI (p = 0.000) with HBP was observed, as 92.9% of hypertensive patients were also obese or overweight. In male compared to women, higher glucose values (p = 0.000), BMI (p = 0.011) and WC (p = 0.000) but lower HDL values (p = 0.005) and WC (p = 0.004) in hypertensive subjects, WC adjusted for BMI was a risk factor for HBP (p = 0.043; OR = 1.059; 95% CI = 1.002–1.119). Regarding BMI classes (<18.5, 18.5–25, >30 kg/m²), waist circumference was higher in overweight/obese subjects for the following ratios to HDL: monocytes (p = 0.045), monocytes x X LDL (p = 0.006), platelets x X LDL (p = 0.002), monocytes x X platelets (p = 0.032). In hypertensive subjects, monocyte x X platelet to HDL ratio was higher (p = 0.03) compared to normotensive and a correlation was also observed between glucose and the following ratios to HDL: monocytes x X LDL (p = 0.033), monocytes x platelets (p = 0.045) and monocytes x platelets x X LDL (p = 0.034).

Conclusions: Even in younger age groups a major impact prediction cardiovascular risk is possible. Anthropometric, metabolic and blood count parameters and its association could be early biomarkers associated with hypertension and should be considered as indicators of present and/or future cardiovascular disease.

DIABETIC STATUS AND NIGHT-TIME SYSTOLIC BLOOD PRESSURE PREDICT EARLY MYOCARDIAL DAMAGE IN NEWLY DIAGNOSED DIABETES MELLITUS TYPE 2 PATIENTS AS THIS IS DEPICTED BY GALECTIN-3 LEVELS

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Objective: Long standing Diabetes Mellitus Type 2 (T2DM) shows a high frequency of cardiovascular events. However, it is not known if newly diagnosed patients with T2DM present early signs of cardiovascular dysfunction. On the other hand, galexin has been introduced as a novel biomarker of myocardial fibrosis. The aim of the study was to evaluate levels of galexin-3 in patients with a very recent diagnosis of T2DM without established cardiovascular disease. In addition, hemodynamic parameters as well as their possible correlation with galexin-3 levels were studied.

Design and method: Patients with a recent diagnosis of T2DM (<6 months) and non-T2DM volunteers were studied. A thorough medical history with a strong emphasis on hypertension and relevant comorbidities, somatometric measurements and blood tests was obtained from all participants. Serum levels of galexin-3 were determined by ELISA. Myocardial function and hemodynamic profile were non-invasively assessed with impedance cardiography. Furthermore, Atherosclerotic Cardiovascular Disease Risk (ASCVD) was calculated.

Results: We studied 135 subjects, 79 T2DM patients with a median disease duration of 1 month (IR: 3) and 56 controls matched by age, sex and hypertension. T2DM patients had significantly higher values of galexin-3 (90 ± 88ug/dl vs 32.92 ± 6.22ng/dl p < 0.001), Cardiac Output (CO), ASCVD Risk compared to controls. Galexin-3 was associated with T2DM (p = 0.001), fasting glucose (p < 0.001), glycosylated hemoglobin (p < 0.001). Furthermore, galexin-3 was associated with CO (p = 0.023), nighttime systolic blood pressure (SBP) (p = 0.03) and ASCVD Risk (p = 0.001). In multiple linear regression analysis, T2DM (Beta: 0.406, p < 0.001) and nighttime SBP (Beta: 0.196, p = 0.028) were identified as independent predictors of galexin-3, after adjustment for age, sex, Body Mass Index and CO.

Conclusions: Galexin-3 is elevated in patients with early stage T2DM even in the absence of established cardiovascular disease, and is independently correlated with T2DM and nighttime SBP. In this group of patients galexin may be used as a biomarker of early myocardial damage. Nighttime SBP emerge as an important mediator in early target organ damage in cardiovascular diseases.

VASULAR BIOMARKERS IN RELATION TO INDICES OF AORTIC STIFFNESS AND RENAL FUNCTION IN PRIMARY HYPERTENSION

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Objective: Degradation of the glyocalyx (GC), the innermost layer protecting the vascular endothelium, and up-regulation of adhesion molecules is associated with subclinical atherosclerosis and endothelial dysfunction, while aortic stiffness is related to early structural vascular changes and decline in renal function. However, few studies have investigated vascular biomarkers in relation to central and peripheral hemodynamics, and renal function in hypertension.

Design and method: 107 patients (58 ± 13 years) with hypertension (mean 149/87 mmHg; 31% on antihypertensive treatment) and a wide range of renal function (eGFR 130 to 21 ml/min x 1.73 m², mean 74 ml/min), were investigated. Indices of aortic stiffness were central systolic blood pressure (cSBP), central pulse pressure (cPP), carotid/brachial pulse pressure ratio (cPPbr/PPb), augmentation index (AIx), carotid-femoral pulse wave velocity (PWV), and aortic-brachial PWV ratio, assessed by applanation tonometry (Sphygmocor, AtCor Medical). Endothelial function was studied by forearm post-ischemic flow mediated vasodilatation. The GC glycoproteins hyluronan (HA) and syndecan-1 (Syn-1), and adhesion molecules (ICAM-1, VCAM-1, and E-selectin), were analysed with ELISA.

Results: Median(range)[ng/ml] HA, Syn-1, ICAM-1, VCAM-1, and E-selectin were 15 [11–20], 38[27–54], 302[264–345], 347[304–408], and 32[26–41] ng/ml, respectively. HA was related to cPP (r = 0.31; P = 0.002), cPPbr/PPb (r = 0.21; P = 0.02), AIx (r = 0.21; P = 0.034), PWV (r = 0.31; P = 0.003), and aortic-brachial PWV ratio (r = 0.27; P = 0.011). Syn-1 was inversely related to cSBP (r = −0.17; P = 0.043). E-selectin tended to be inversely related to cSBP (r = −0.10) and to cPP (r = 0.077). HA and VCAM-1 were inversely related to eGFR (r = −0.45 and r = −0.43; both P < 0.001). All vascular biomarkers were unrelated to flow-mediated vasodilatation.

Conclusions: Vascular biomarkers were associated with indices of aortic stiffness, and impaired renal function, but was unrelated to peripheral endothelial function. HA showed association with increased stiffness, compared to Syn-1 that was unrelated to stiffness, and both HA and VCAM-1 were inversely related to renal function, where elevation of HA and VCAM-1 may reflect endothelial dysfunction of the kidneys. Thus, our results suggest that functional vascular biomarkers may relate to early structural and functional vascular changes in uncomplicated hypertension with impaired renal function.

CENTRAL SYSTOLIC BLOOD PRESSURE PREDICTS BIOMARKERS OF ENDOTHELIAL DYSFUNCTION AND THROMBOINFLAMMATION IN A LARGE COHORT OF PATIENTS WITH VARIOUS DEGREE OF CARDIOVASCULAR BURDEN

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Objective: Circulating microvesicles (MVs) emerge as biomarkers of endothelial injury and thrombosis, primarily in cardiovascular (CV) disease. Therefore, we measured endothelial (EMVs), platelet (PMVs) and erythrocyte MVs (RMVs) in patients with various degree of CV burden. We then sought to compare them to coronary artery disease (CAD), as positive, and to healthy subjects, free from CV risk factors, as negative controls. We finally identified independent predictors of MVs.

Design and method: We enrolled consecutive patients from our Cardiology, Hypertension, Diabetic, Rheumatic, and Nephrology Outpatient Units with available MVs measurements. Central blood pressure (BP) was measured by either application tonometry or Mobil-O-graph device, while MVs by a previously described, standardized flow cytometry protocol.