NEUTROPHIL-TO-LYMPHOCYTE RATIO AND MIR-126-3P AS BIOMARKERS OF NOCTURNAL AND RESISTANT HYPERTENSION IN CKD PATIENTS.

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Introduction : Pro-inflammatory milieu of chronic kidney disease (*CKD*) increases cardiovascular risk of this patient population. Neutrophil-to-lymphocyte ratio (*NLR*) is an easily available inflammatory parameter whereas microRNA-126-3p is regarded as a novel biomarker of endothelial damage.

Objectives: The aim of the study is to evaluate the association between NLR and relative expression of miR-126-3p with blood pressure values and circadian blood pressure (*BP*) abnormalities in CKD patients.

Patients and methods: This single-centre observational study involved stable CKD stage 1-5 patients and healthy age- and sex- matched control subjects with no clinical evidence of infection. All study participants had 24-hour automatic blood pressure measurement (*ABPM*) performed. Plasma miRNA was quantified by qRT-PCR with the use of the ΔΔCt method and endogenous control U6 snRNA.

Results: In total, 90 CKD patients (60 ± 14 years, 52% males, 33 renal transplant recipients) and 25 healthy control subjects (55 ± 13 years, 48% males, $p<0.05$) were enrolled in the study. Subjects with nocturnal hypertension (N=41, 46%) presented with higher plasma relative expression of miR-126-3p (4.0 [2.2-7.0] vs. 1.7 [1.0 - 3.5], $P = 0.004$) compared to patients with normal night-time BP values. We have observed a positive correlation between plasma miR-126-3p and average nocturnal SBP (rho = 0.27, $P = 0.02$), average nocturnal DBP (rho = 0.32, $P = 0.003$), night-day SBP ratio (rho = 0.23, $P = 0.03$), and night-day DBP ratio (rho = 0.26, $P = 0.02$). A positive association was found between NLR and average nocturnal SBP (rho = 0.25, P = 0.01), ND-SBP ratio (rho=0.26, P = 0.006) and ND-DBP ratio (rho=0.28, P = 0.03). Based on the multivariate regression analysis that included bivariate correlates of nocturnal SBP (P = 0.1), NLR was the the only independent predictor of nocturnal SBP (B=11.2, 95%CI 1.8 – 10.6, $P = 0.02$). NLR was higher in patients with resistant hypertension (N=20, 22%), being the only biochemical parameter that distinguished this group from the rest of the study cohort (3.0 [2.3 – 4.2] vs. 2.0 [1.6 – 2.9], $P = 0.01$).

Conclusions: Increased NLR may reflect the involvement of inflammatory pathways in the development of nocturnal and resistant hypertension. MiR-126-3p may serve as a biomarker of endothelial damage in CKD population with abnormal circadian blood pressure pattern.