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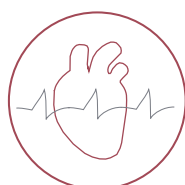
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to hypertension, stroke, and other cardiovascular diseases. An electron paramagnetic resonance (EPR) and spin-probing method has been developed to elucidate the membrane fluidity (a reciprocal value of membrane microviscosity) and perturbations of the membrane function by external agents. The aim of the study was to investigate microviscosity of erythrocyte membranes from patients with controlled and true resistant arterial hypertension.

We investigated 40 patients of SE «Strazhesko Institute of Cardiology» (Kyiv, Ukraine). Male and female patients aged 45 through 65 years with controlled and true resistant arterial hypertension were selected for participation. Of them, 20 patients were diagnosed controlled arterial hypertension by triple therapy and 20 with true resistant arterial hypertension. True resistant arterial hypertension confirmed by the office and ambulatory blood pressure monitoring despite the use of 3 antihypertensive medications including a calcium channel blocker, a blocker of the renin-angiotensin system and a thiazide diuretic with maximally tolerated doses for at least 3 months. The control group was composed of 20 apparently healthy volunteers. All the groups were randomized for age and sex composition. All subjects were informed about the aim of the study. Informed consent was obtained from every participant.

Microviscosity of erythrocyte membranes was studied with spin probe method using adamantane-based nitroxyl radical (AdTEMPO). We calculated the following parameters from the obtained spectra: the effective rotational diffusion correlation times (τ_{eff}), hyperfine interaction constant (HI), and temporal change in signal intensity. Blood samples were obtained from median cubital vein puncture of fasting patients in the morning and mixed with 3.8 % sodium citrate anticoagulant (9:1) in plastic test tubes. Moreover since various substances may be absorbed by cellular membranes and block their receptors, increasing their lability and disrupting permeability, all the experiments were performed on erythrocytes prior to and after washing with 0.9 % sodium chloride solution.

The process of probe diffusion into the cells can be divided into two successive stages: sorption on the surface of cell membranes and penetration into the layers of the lipid bilayer of the membranes. Therefore, according to the EPR spectra of the probes in the membrane, we can observe different values of the correlation time of the rotational diffusion of the probes for the period of AdTEMPO binding to the membrane surface (5 min) and during the probes in the lipid layers of erythrocyte membranes (60 min). The analysis of the obtained results showed that in patients with controlled and resistant arterial hypertension the primary sorption of AdTEMPO (after 5 min) on the erythrocyte membranes is accompanied by an increase in τ_{eff} , which indicates a complication of probe rotation. After 60 min, the correlation time of the rotational diffusion of the probe in the membrane continues to increase, but these changes are not significant, which may be due to a violation of the structural organization of the lipid bilayer and the spectrum of integrated proteins. This

assumption was confirmed by the data of the intensity of the residual signal of the probe. In patients with controlled and resistant arterial hypertension, the permeability of cell membranes is significantly reduced, so that the antioxidants contained inside the cell can not react with the nitroxyl radical, which is outside.

We first used AdTEMPO to study the structural and dynamic changes of erythrocyte membranes in patients with controlled and true resistant arterial hypertension by spin probes.

Desaturation and IL-18/IL-10 ratio as prognostic predictors for adverse right ventricular remodeling

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Adverse right ventricular (RV) remodeling leads to heart failure that represents an important determinant of outcome in patients with hypertension (HT) combined with chronic obstructive pulmonary disease (COPD). Chronic hypoxia and systemic inflammation contribute to tissue destruction and disruption normal repair and defense mechanisms, resulting in pulmonary vascular remodeling and pulmonary hypertension.

Purpose. To evaluate the predictive role of interleukin(IL)-18, IL-18/IL-10 ratio and desaturation for RV remodeling in patients with HT combined with COPD.

Methods. We investigated serum IL-18, IL-10 levels in 69 patients with HT stage II, COPD (GOLD 2, group B) in remission (57 males, 12 females; 55,80±5,51 y. o.) who underwent 6-min walk test (6MWT), oximetry, spirometry, X-ray, echocardiography.

Results. Desaturation during 6MWT was associated with an imbalance of inflammatory response with increasing proinflammatory IL-18 and decreasing anti-inflammatory IL-10; and structural changes in the right heart chambers, indicating an increase in their overload (*Tab.*). ROC analysis revealed > 26.64 as optimal cutoff value for IL-18/IL-10 ratio to predict RV pressure overload (RV wall thickness > 5 mm and RV diameter < 30 mm) with a sensitivity of 72,7 % and a specificity of 72.0 % (AUC=0.699, p=0.003). Cutoff value for IL-18 to predict RV pressure overload was > 3162 pg/ml with a sensitivity of 50.0 % and a specificity of 88.0 % (AUC=0.631, p=0.054). RV remodeling in response to pressure overload is often characterized by increased collagen deposition and associated with maladaptive RV structural and functional impairment. IL-18/IL-10 ratio demonstrated a stronger predictive validity for adverse RV remodeling than IL-18 alone.

Conclusions. Desaturation is associated with inflammatory activation and contributes to right heart

chambers overload. The cutoff level of IL-18/IL-10 ratio 26.64 is an independent prognostic predictor for RV pressure overload in patients with HT stage II in combination with moderate COPD.

Table 1

Parameters	HT and COPD with desaturation (n=39)	HT and COPD without desaturation (n=30)
IL-18, pg/ml	3296,24 (2356,03; 3978,92)*	2256,30 (1980,88; 2738,86)
IL-10, pg/ml	61,12 (48,34; 79,63)*	106,35 (89,45; 126,97)
Right atrial size, mm	39,79±2,27**	35,83±5,02
RV diameter, mm	27,10±2,22**	28,37±2,40
RV wall thickness, mm	5,58±0,57**	5,22±0,61
Pulmonary artery to aorta ratio	0,75±0,07**	0,71±0,08
Mean pulmonary artery pressure, mm Hg	25,82±2,17	25,57±2,62

Values are given as mediana (LQ; UQ) or mean±standard deviation. * – statistically significant changes ($p<0,001$). ** – statistically significant changes ($p<0,05$)

Predictive value of platelet volume indices for one year prognosis in STEMI patients

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Platelets play an important role in the pathogenesis of acute coronary syndromes (ACS). It is proved that the size of platelets reflects their activity and larger platelet volume is associated with enhanced platelet reactivity. Larger platelets are relatively young, contains more intracellular granules, has greater thrombogenic potential. There is evidence of the prognostic value of P-LCR, PDWc because platelets creates an important link between inflammation and thrombosis, so they can be considered as a part of humoral-cellular immu-

nity. Mean platelet volume (MPV) has been widely evaluated, but new platelet counts, such as PDW, P-LCR have been less well studied as markers of platelet activation in STEMI pts.

Methods. The percentage of the peripheral venous blood platelet heterogeneity in size (PDWc, P-LCR) was evaluated in 92 STEMI, treated with primary PCI, at admission, on day 3, and 7. The following cardiovascular events during 1 year of the FU were used as the end point: death, myocardial infarction, stroke, revascularization, or hospitalization due to progression of ischemia, or heart failure. All patients were divided into 2 groups depending on the presence (1st group – 44 pts) and absence of endpoint (2nd group – 48 pts). Both groups were comparable by the clinical profile, medical history and treatment.

Results. PDWc was higher in group 1, and this discrepancy became significant on the third day (41.8 ± 0.7 % in group 1 vs 40.1 ± 0.7 % in group 2, $p<0.05$) and on day 7 AMI (41.2 ± 0.6 % in group 1 vs 39.0 ± 0.4 % in group 2, $p<0.01$). PDWc values in the dynamics remained relatively constant in both groups, in contrast to P-LCR, which values increased on day 7 in group 1 ($p<0,05$). The values of P-LCR were higher in patients in group 1: on the 1st day (35.0 ± 2.9 % in group 1 vs 28.4 ± 1.2 % in group 2, $p<0.1$), on the 3rd day (34.7 ± 2.5 % in group 1 vs 28.5 ± 1.2 % in group 2, $p<0.05$) and on the 7th day (39.4 ± 4.3 % in group 1 vs 29.2 ± 1.2 % in group 2, $p<0,01$).

Conclusion. We can assume that the initial trend to a more pronounced increase in the percentage of immature, large platelets in the hospital period on STEMI are associates with an undesirable 1-year prognosis.

Relation of MMP-9 genetic polymorphism and concentration with echocardiographic parameters in Ukrainian patients with coronary artery disease

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Aim. The aim of our research was to study the association of MMP-9 concentration and rs 17576 polymorphism of the MMP-9 gene with the size of the heart chambers (echo-

	Group 1 (n=44)			Group 2 (n=48)			P group 1 vs group 2
	Day1	Day3	Day 7	Day 1	Day3	Day7	
PDWc (%)	41,0±0,7	41,8±0,7	41,2±0,6	39,6±0,6	40,1±0,7	39,0±0,4	<0.05 on day 3 <0.02 on day 7
P-LCR (%)	35,0±2,9	34,7±2,5	39,4±4,3	28,4±1,2	28,5±1,2	29,2±1,2	<0.02 on day 1 and 3 <0.05 on day 7 <0.05 in gr 1 (day1 vs day7)

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