RELATIONSHIP OF NEOPTERIN TO INSULIN RESISTANCE, VASCULAR CELL ADHESION MOLECULE-1, MYELOPEROXIDASE AND sE-SELECTIN LEVELS IN UNSTABLE ANGINA

Peteris Tretjakovs[1], Antra Jurka[2], Inga Bormane[1], Indra Mikelsone[2], Dace Reihmane[1], Karlina Elksne[1], Gita Krieviņa[2], Jurijs Verbovenko[3], Guntis Bahs[3]

[1] **Department of Human Physiology and Biochemistry**, Riga Stradiņš University, Latvia
[2] **Institute of Experimental and Clinical Medicine**, University of Latvia, Riga, Latvia | [3] **Riga Eastern Clinical University Hospital**,Latvia

The purpose of the present study was to evaluate the degree of insulin resistance (IR) and the serum levels of neopterin, adhesion molecules, and myeloperoxidase (MPO) in coronary artery disease (CAD) patients with stable and unstable angina pectoris (SAP, UAP) and to clarify whether there is a relationship between neopterin and other biomarkers.

Material and Methods. 48 patients with CAD were classified into two groups: 24 patients with SAP and 24 patients with UAP. 20 healthy subjects were selected as controls (C). Serum soluble vascular cell adhesion molecule-1 (sVCAM-1), intercellular cell adhesion molecule-1 (sICAM-1), sE-selectin, and MPO concentrations were determined by Luminex xMAP technology, but serum neopterin concentration was measured by ELISA. IR was measured by HOMA-IR method.

Results. The patients with UAP had significantly higher IR, neopterin, MPO, sVCAM-1, sICAM-1, and sE-selectin levels than the healthy control subjects ($p<0.05$). The above biomarker, except for sE-selectin, was also elevated in the patients with SAP ($p<0.05$), but there was no difference between the two patient groups. The only exception was MPO and IR, which were significantly higher in the UAP group ($p<0.05$). Neopterin was correlated only with sVCAM-1 ($p<0.05$).

	Healthy controls, C	Coronary artery disease patients, CAD		*P*
	(n=20)	Stable angina pectoris, SAP (n=24)	Unstable angina pectoris, UAP (n=24)	
Age, years	56±11	58±10	59±6	NS
Men, %	30 (n=6)	33 (n=8)	33 (n=8)	NS
Smoker, %	20 (n=4)	21 (n=5)	25 (n=6)	NS
Body mass index, kg/m^2	25.8±3.9	36.0±5.2	35.3±4.7	<0.001
Dyslipidemia, %	0 (n=0)	100 (n=24)	100 (n=24)	<0.001
Hypertension, %	0 (n=0)	75 (n=18)	75 (n=18)	<0.001
High-sensitivity C-reactive protein, mg/l	1.4±0.7	2.8±1.0	3.9±1.8	<0.001

Data are expressed as number (n), or means±SD.
NS=not significant ($P>0.05$ compared to all group)

Table 1. Characteristics of Study Groups

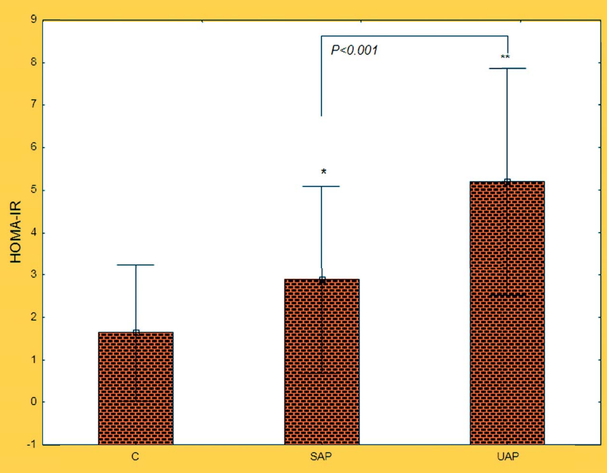

Fig. 1. Insulin resistance (HOMA-IR) in coronary artery disease patients with stable (SAP) and unstable angina pectoris (UAP); and healthy subjects (C). The data are expressed as mean±SD. *$P<0.001$, **$P<0.00001$ vs. controls.

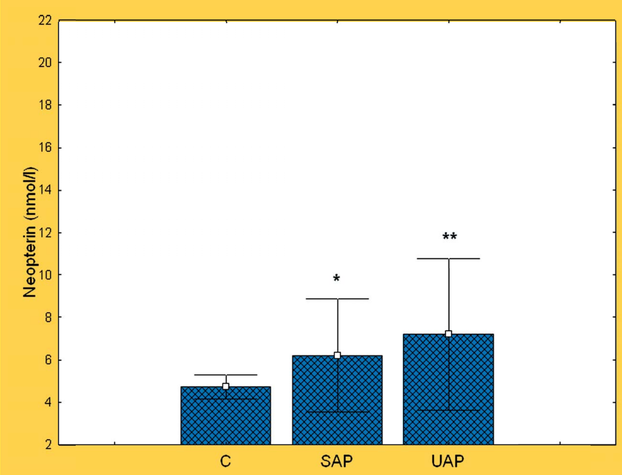

Fig. 2. Neopterin level in coronary artery disease patients with stable (SAP) and unstable angina pectoris (UAP); and healthy subjects (C). The data are expressed as mean±SD. *$P<0.05$, **$P<0.01$ vs. controls.

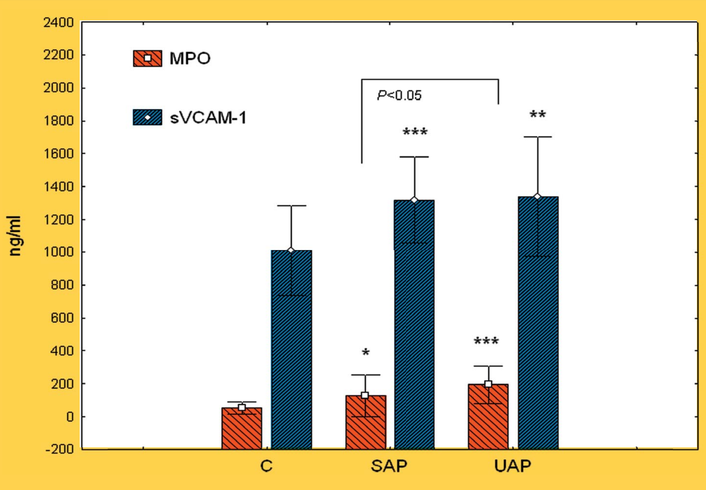

Fig. 3. Myeloperoxidase (MPO) and soluble soluble vascular cell adhesion molecule-1 (sVCAM-1) level in coronary artery disease patients with stable (SAP) and unstable angina pectoris (UAP) patients; and healthy subjects (C). The data are expressed as mean±SD. *$P<0.05$, **$P<0.01$, ***$P<0.001$ vs. controls.

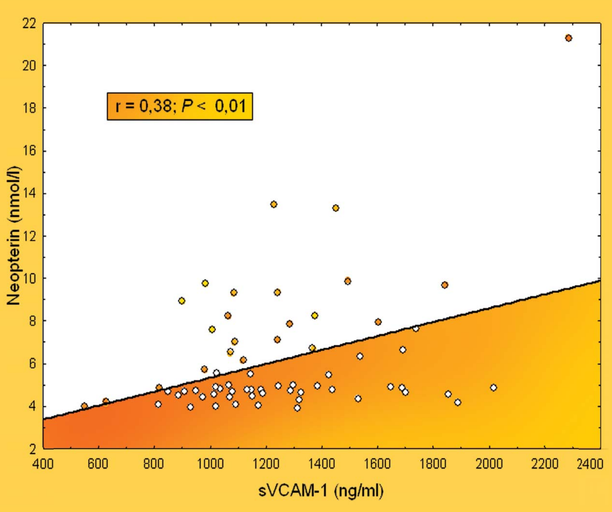

Fig. 4.
Correlation of soluble vascular cell adhesion molecule-1 (sVCAM-1) and neopterin levels in the total clinical material.

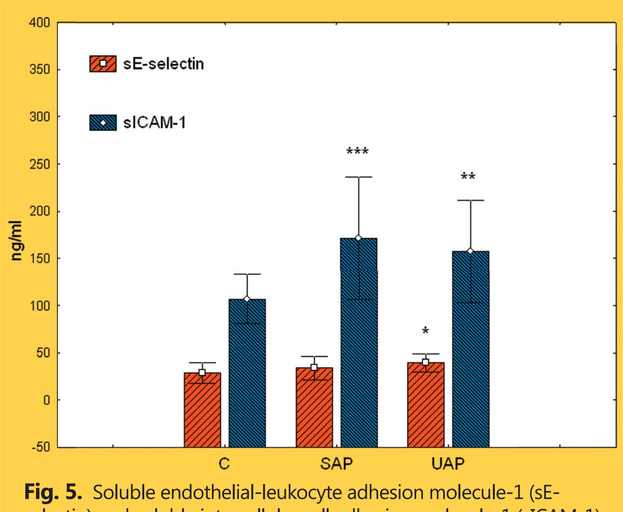

Fig. 5. Soluble endothelial-leukocyte adhesion molecule-1 (sE-selectin) and soluble intercellular cell adhesion molecule-1 (sICAM-1) level in coronary artery disease patients with stable (SAP) and unstable angina pectoris (UAP); and healthy subjects (C). The data are expressed as mean±SD. *$P<0.05$, **$P<0.01$, ***$P<0.001$ vs. controls.

Conclusion. The presence of SAP in CAD patients is associated with elevated IR, serum sICAM-1, sVCAM-1, MPO, and neopterin levels. UAP is characterized by more pronounced changes in MPO and IR, and there is also a significant increase in serum sE-selectin concentration.

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