

Neopterin, cellular adhesion molecules and myeloperoxidase in metabolic syndrome patients with coronary artery disease

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Background. Both endothelial cell activation and macrophage activation play a significant role in atherogenesis and atheromatous plaque vulnerability and may determine rapid coronary artery disease (CAD) progression. The aim of the present study was to evaluate differences in serum levels of neopterin, adhesion molecules and myeloperoxidase (MPO) between CAD and metabolic syndrome (CAD-MetS) patients with stable and unstable angina pectoris (SAP, UAP), and to clarify relationships between neopterin and other biomarkers.

Materials and Methods: The study included 60 patients with CAD-MetS who were classified into two groups, 30 patients with SAP and 30 patients USP. 20 healthy subjects were selected as controls (C). All groups were matched for age, sex and number of smokers, but the patient groups also for body mass index. Serum soluble vascular cell adhesion molecule-1 (sVCAM-1), intercellular cell adhesion molecule-1 (sICAM-1), sE-selectin and MPO levels were measured by Luminex xMAP technology, but serum neopterin concentrations were measured by radioimmunoassay.

Results. Serum levels of neopterin, MPO, sVCAM-1, sICAM-1, and sE-selectin were significantly higher in patients with UAP in comparison with the group of healthy controls ($p < 0.05$). Patients with SAP also had higher levels of these biomarkers than healthy controls ($p < 0.05$), except for sE-selectin. The biomarkers did not differ between the two patient groups, except for MPO, which was significantly higher in the USP group ($p < 0.05$). Neopterin was significantly correlated only with sVCAM-1 ($p < 0.05$).

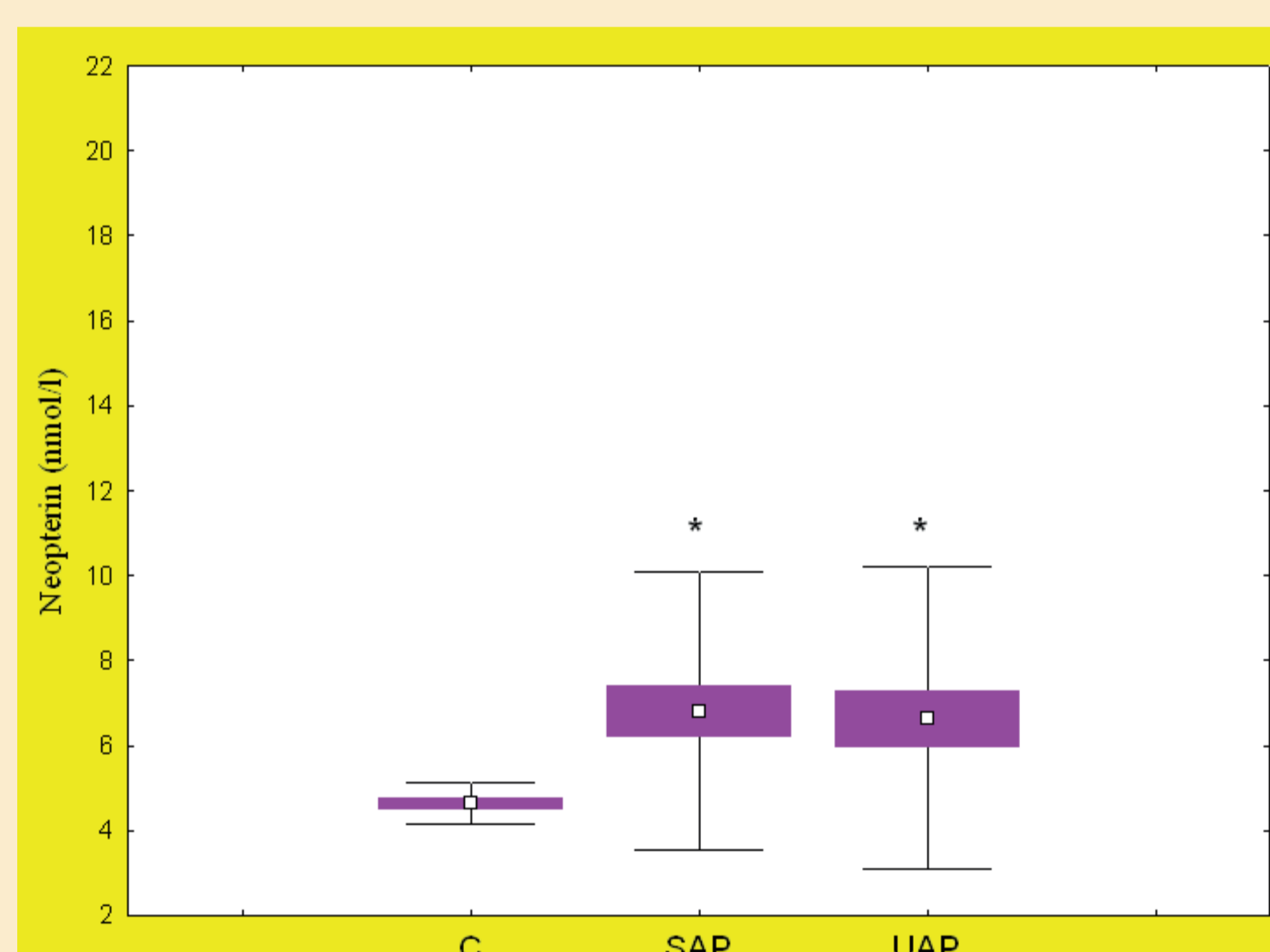


Figure 1. Neopterin level in stable (SAP) and unstable angina pectoris (UAP) patients with coronary artery disease and metabolic syndrome; and healthy subjects (C). Data are expressed as mean±SD. * $p < 0.05$ vs. controls.

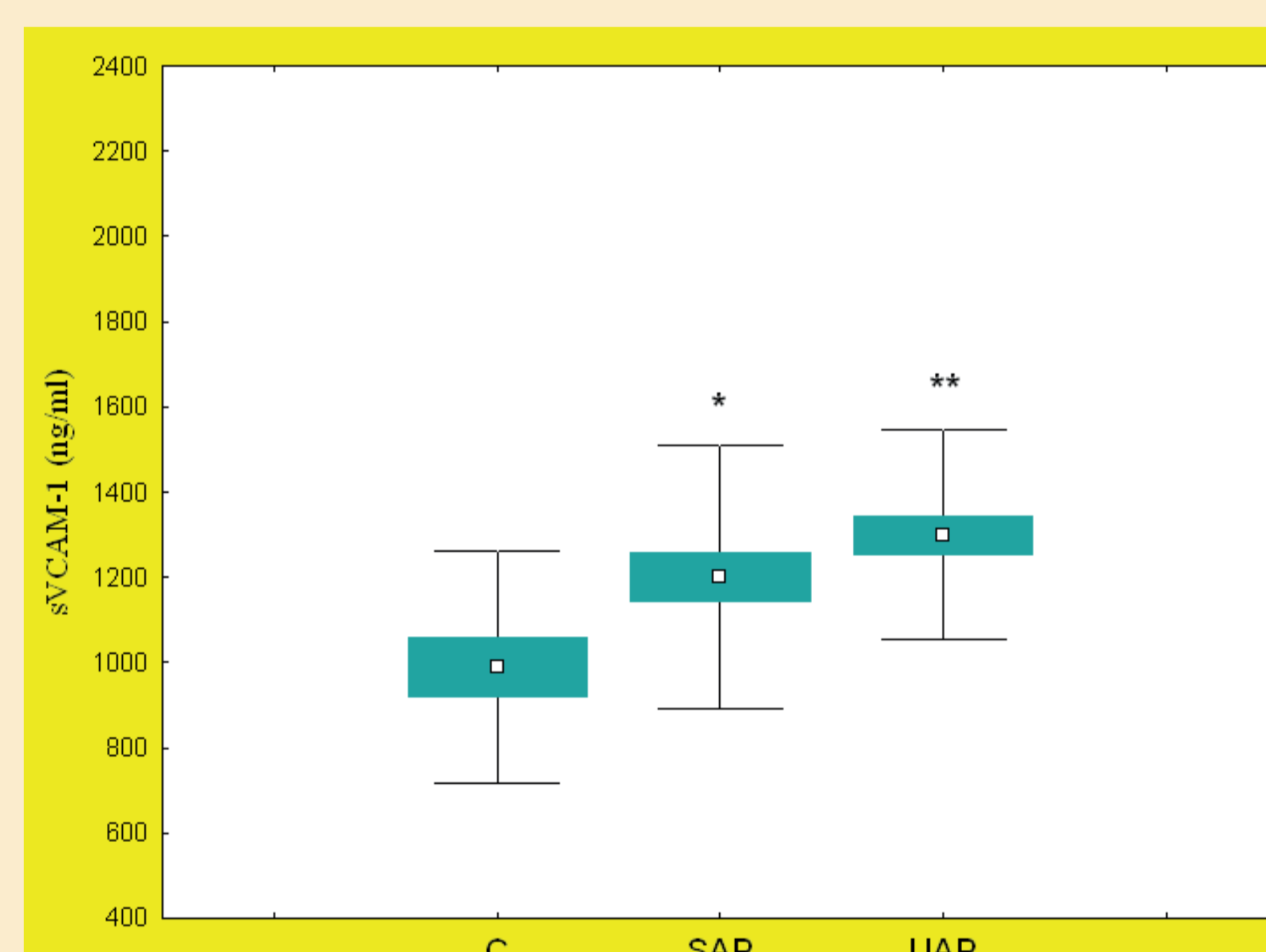


Figure 2. Soluble vascular cell adhesion molecule-1 (sVCAM-1) level in stable (SAP) and unstable angina pectoris (UAP) patients with coronary artery disease and metabolic syndrome; and healthy subjects (C). Data are expressed as mean±SD. * $p < 0.05$, ** $p < 0.01$ vs. controls.

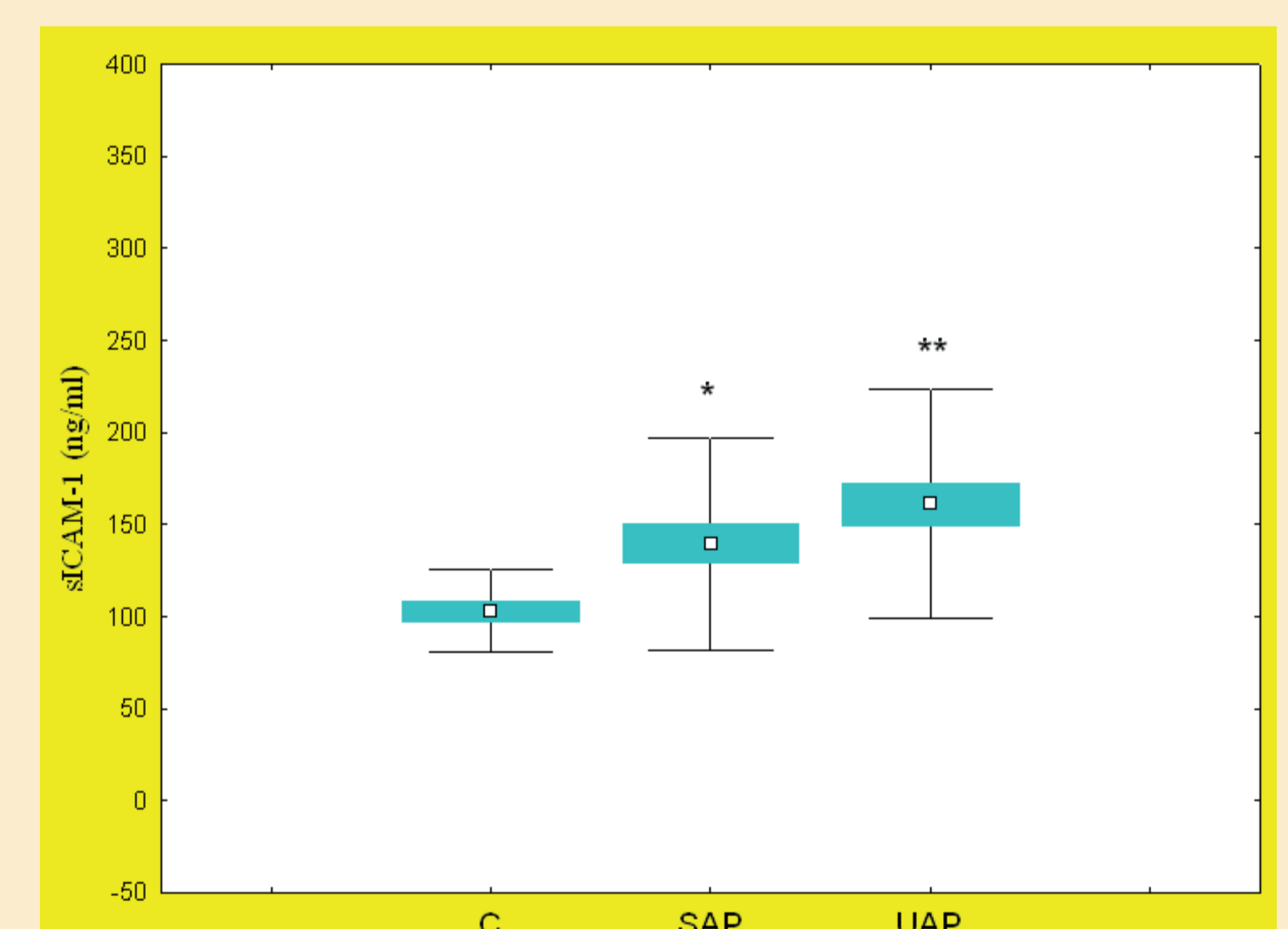


Figure 3. Soluble intercellular cell adhesion molecule-1 (sICAM-1) level in stable (SAP) and unstable angina pectoris (UAP) patients with coronary artery disease and metabolic syndrome; and healthy subjects (C). Data are expressed as mean±SD. * $p < 0.05$, ** $p < 0.001$ vs. controls.

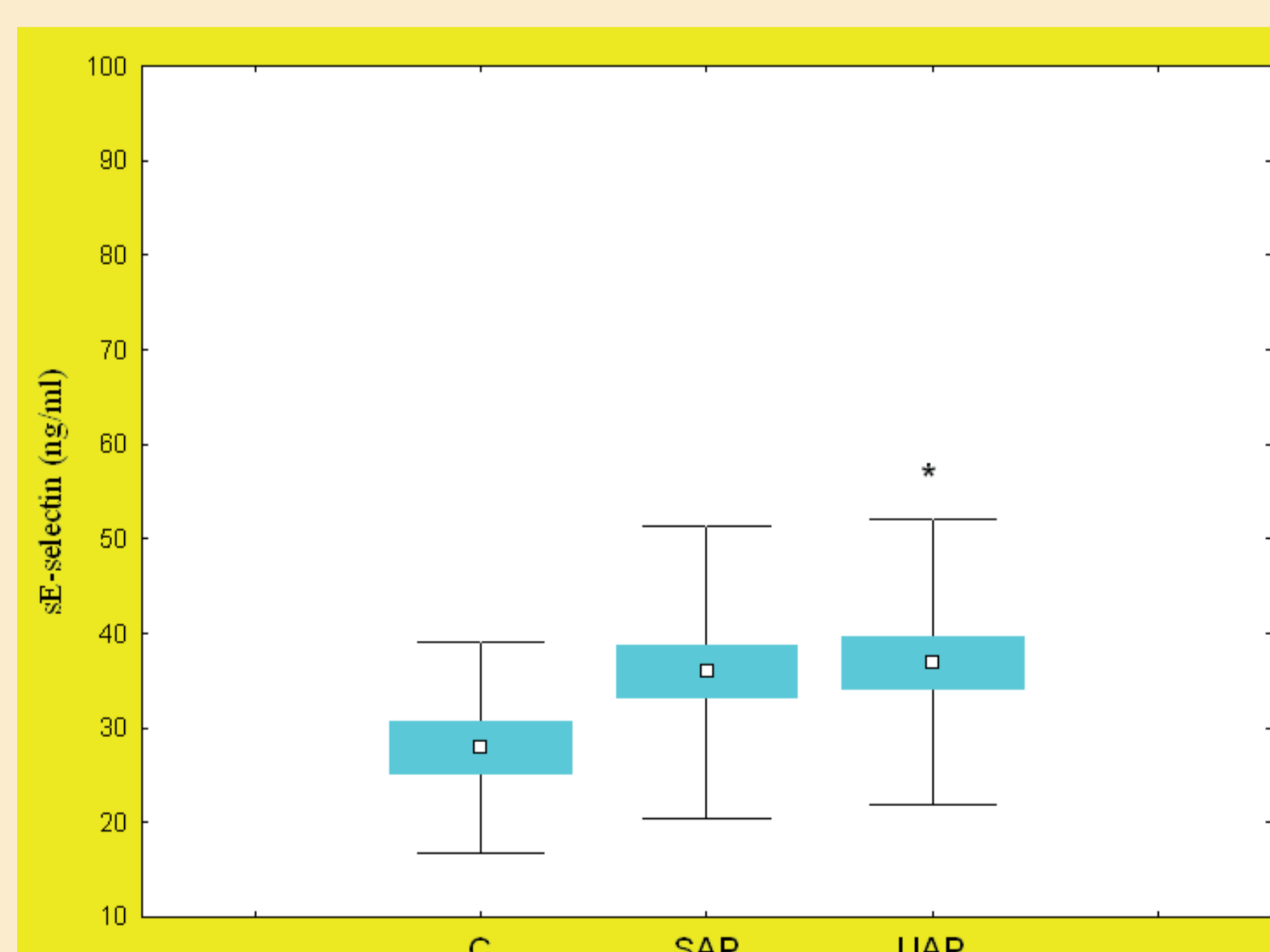


Figure 4. Soluble endothelial-leukocyte adhesion molecule-1 (sE-selectin) level in stable (SAP) and unstable angina pectoris (UAP) patients with coronary artery disease and metabolic syndrome; and healthy subjects (C). Data are expressed as mean±SD. * $p < 0.05$ vs. controls.

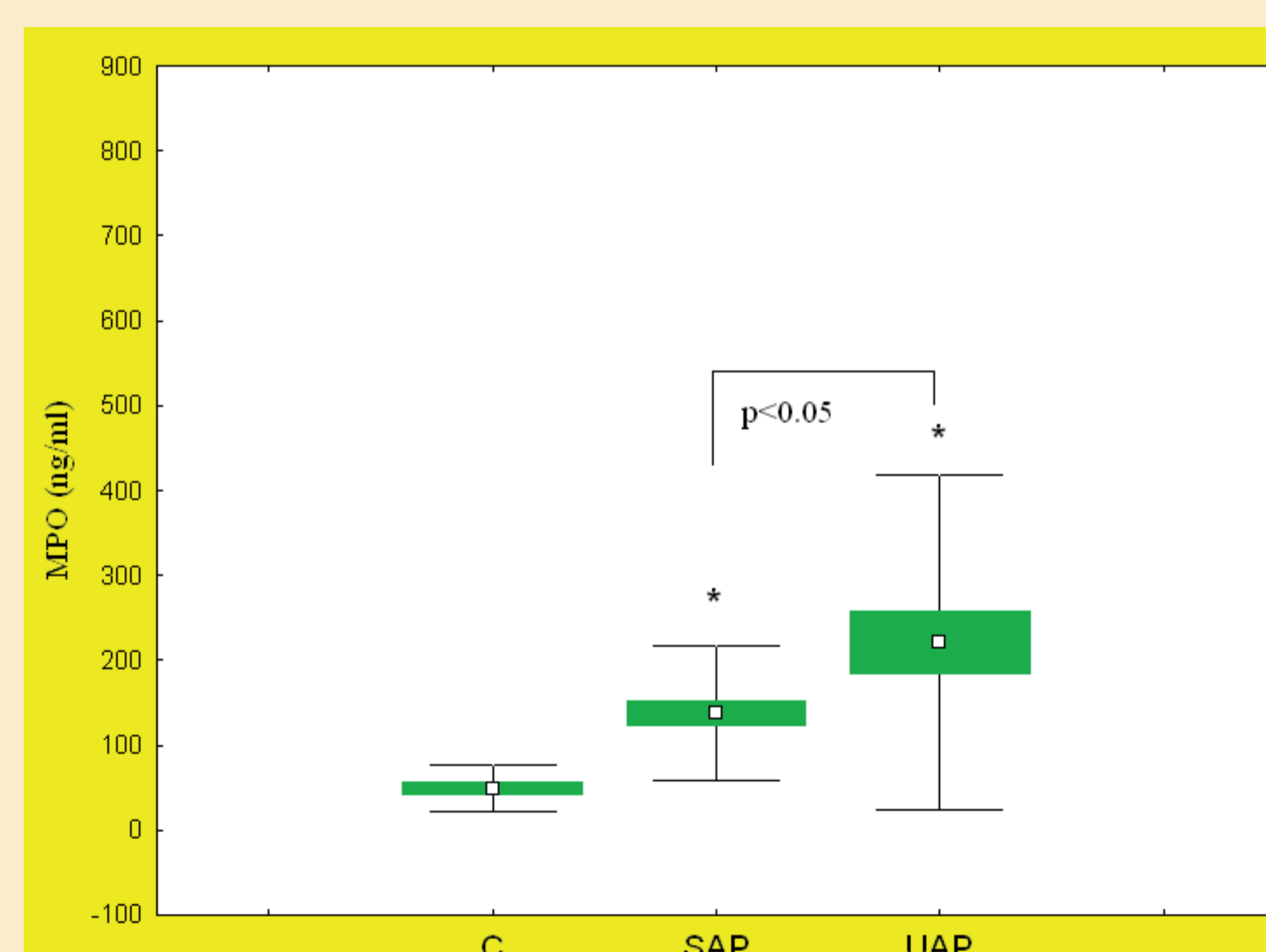


Figure 5. Myeloperoxidase (MPO) level in stable (SAP) and unstable angina pectoris (UAP) patients with coronary artery disease and metabolic syndrome; and healthy subjects (C). Data are expressed as mean±SD. * $p < 0.0001$ vs. controls.

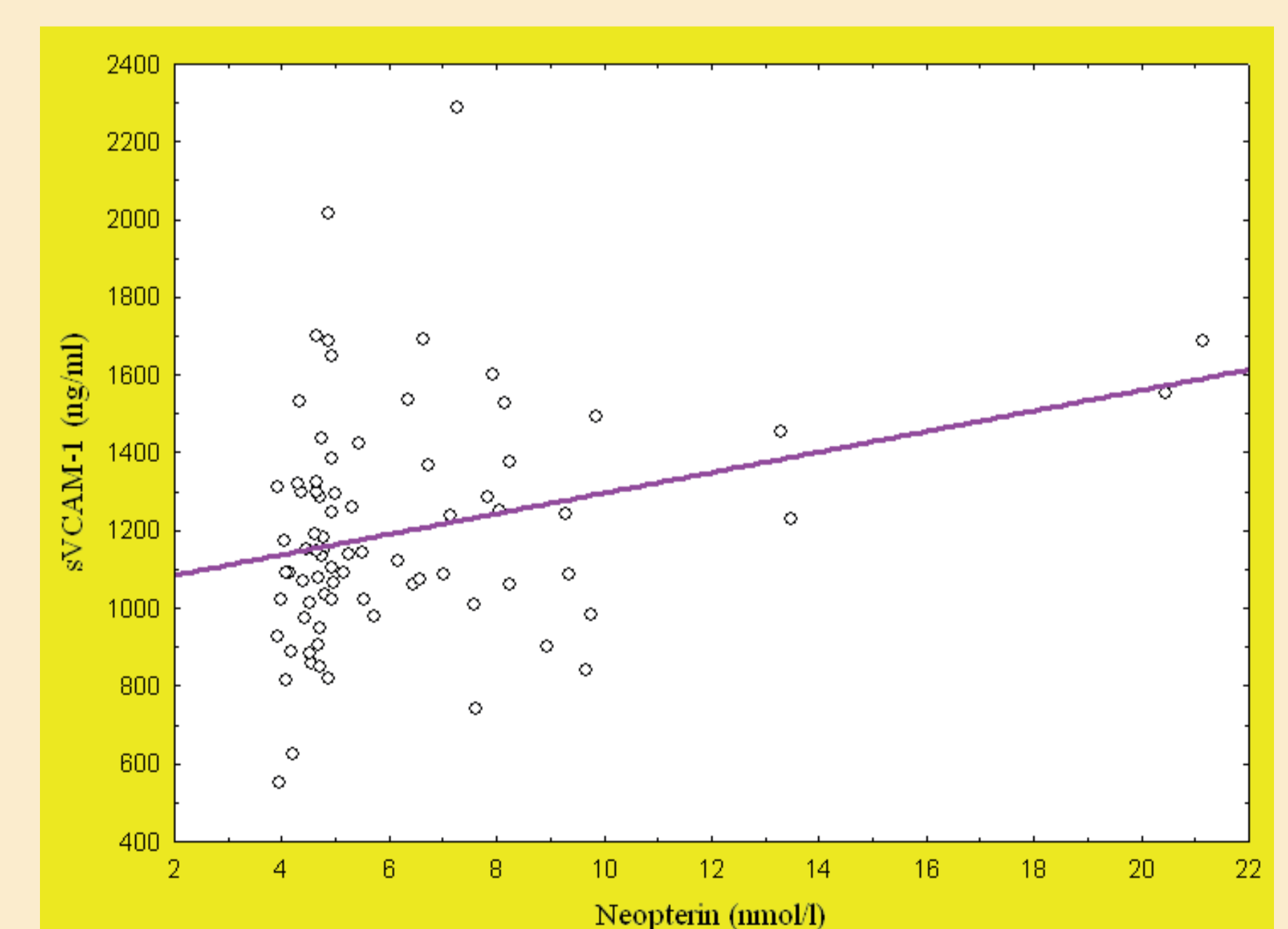


Figure 6. Correlation of neopterin and soluble vascular cell adhesion molecule-1 (sVCAM-1) levels in total clinical material ($r = 0.28$, $p = 0.014$).

Conclusions: CAD-Met patients with SAP have more elevated serum sICAM-1 and sVCAM-1 levels, simultaneously with higher MPO and neopterin concentrations than healthy subjects, but UAP is also associated with more substantial changes in MPO and significantly increased sE-selectin levels. Neopterin has a close correlation only with sVCAM-1.

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