

PUBLICATIONS

NEW HEMATOLOGICAL INDICES OF SYSTEMIC INFLAMMATION IN THE DIAGNOSIS OF CHRONIC CORONARY SYNDROME

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Chronic coronary syndrome (CCS) is maintained by persistent low-grade inflammation of the vascular wall, which largely accounts for the residual cardiovascular risk. The aim of the study was to evaluate the discriminative capacity of the systemic inflammation indices NLR, PLR, MLR, NMR, SIRI, SII and AISI, calculated from the routine complete blood count (CBC), in patients with CCS in comparison with clinically healthy individuals.

A total of 112 patients aged 45–75 years with CCS verified by clinical presentation, stress testing and CT and/or invasive coronary angiography, and 42 comparison subjects were examined. Angina of functional class II was diagnosed in 48 (42.9 %) patients and class III in 64 (57.1 %); mean disease duration was 9.2 ± 4.3 years. The CCS group was older (65.0 ± 7.9 vs 51.2 ± 3.8 years) and had a higher burden of risk factors (body mass index 30.8 ± 4.4 vs 26.1 ± 3.2 kg/m², arterial hypertension 98.2 % vs 33.3 %, type 2 diabetes mellitus 32.1 % vs 4.8 %; all $p < 0.001$). Distribution normality was tested by the Shapiro–Wilk test; groups were compared using Student's t-test or the Mann–Whitney U test.

Table 1. Six of the seven indices studied differed significantly between the groups.

Parameter	CCS (n=112)	Comparison (n=42)	p
NLR	2.1 ± 1.2	1.5 ± 0.4	0.0006
PLR	140.4 ± 50.9	124.6 ± 33.0	0.026
MLR	0.19 ± 0.08	0.13 ± 0.04	0.0002
NMR	11.7 ± 5.3	12.5 ± 6.1	0.455
SIRI *	0.61 (0.31–1.12)	0.31 (0.23–0.45)	<0.0001
SII *	431 (280–672)	317 (244–408)	<0.0001
AISI *	136.8 (87.9–242.6)	75.9 (58.2–97.1)	0.0001

* Me (Q1–Q3), Mann–Whitney U test; other parameters $M \pm SD$, Student's t-test.

The most pronounced differences were shown by the composite indices integrating several cellular lines of inflammation: the median SIRI in CCS was almost twofold higher than in the comparison group, AISI 1.8-fold and SII 1.36-fold. The simple ratios NLR, PLR and MLR were also significantly elevated, whereas the NMR index did not discriminate between the groups. The moderate magnitude of the shifts is consistent with the smouldering, low-intensity character of inflammation in stable CCS.

In patients with CCS the hematological indices of systemic inflammation NLR, PLR, MLR, SIRI, SII and AISI are significantly higher than in the comparison group, the composite indices SIRI, SII and AISI possessing the highest discriminative capacity. Since they are derived from the routine CBC and require no additional expenditure, they may be used for repeated screening of the inflammatory status of patients with CCS and for timely intensification of anti-inflammatory therapy in the subgroup with high residual inflammatory risk. The proposed cut-off values require prospective validation in Uzbekistan.