The age-specific prognostic impact of the platelet-to-lymphocyte ratio on long-term outcome after acute coronary syndrome

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Background
Personalized risk stratification within the ageing society after ACS remains scarce, but in urgent need. Increased platelet activity together with inflammatory activation play a key role during ACS. We aimed to evaluate the age-specific prognostic potential of the platelet to lymphocyte ratio (PLR) on long-term cardiovascular mortality after ACS.

Patients and Methods
Patients presenting with ACS admitted to the Vienna General Hospital between 12/1996 and 01/2010 were recruited within a clinical registry including assessment of peripheral blood samples. The impact of the PLR on survival was assessed by Cox-regression hazard analysis.

Results
We included a total of 681 patients with a median age of 64 years (IQR:45-84). 200 (29.4%) individuals died during the median follow-up time of 8.5 years. A strong independent association of the PLR with cardiovascular mortality was found in the total study population (adjusted [adj.] hazard ratio [HR] per one standard deviation [1-SD] of 1.52 [95%CI:1.18-1.96]; p<0.001)

After stratification in individuals <65 years (n=339) and ≥65 years (n=342), a prognostic effect of the PLR on cardiovascular mortality was solely observed in elderly patients ≥65 years (adj. HR per 1-SD of 1.32 [95%CI: 1.01-1.74]; p=0.045), but not in their younger counterparts <65 years (adj. HR per 1-SD of 1.08 [95%CI: 0.60-1.93]; p=0.804).

Conclusion
The present investigation highlights a strong and independent age-specific association of the PLR with cardiovascular mortality in patients with ACS. The PLR only allows to identify patients ≥65 years at high risk for fatal events after ACS – even from a long-term perspective.

Table 1: Baseline characteristics stratified by age groups. Categorical data are presented as counts and percentages and analyzed using Chi-square-test. Continuous data are presented as median and the respective interquartile range and analyzed using Mann Whitney U test. ST-elevation myocardial infarction (STEMI), coronary vessel disease (CVD), lactate dehydrogenase (LDH)

Table 2: Unadjusted and adjusted effects of platelet-to-lymphocyte ratio on outcome within the total study population and stratified according age-groups. Cox proportional hazard model. The multivariate model was adjusted for: age, gender, STEMI, hypertension, type 2 diabetes mellitus, hypercholesterolemia, smoking status, family history of CVD

Figure 1: Effect of platelet-to-lymphocyte ratio on long-term cardiovascular mortality stratified by age. Kaplan-Meier curves for the impact of tertiles of neutrophil to lymphocyte ratio on cardiovascular mortality plotted in low (= Tertile 1), intermediate (= Tertile 2) and high (= Tertile 3) and compared using log-rank test - Total study population: p<0.001; <65 years p=0.850; ≥65 years: p=0.001

Conflicts of Interest
Nothing to declare.

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