Post-menopausal women show increased levels in risk prediction scores with age as dependent variable

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Background: Men and women differ in outcome after percutaneous coronary intervention (PCI). However, frequently used scores for ischemic risk prediction in patients with cardiovascular disease do not include sex-related factors. In this study, we aimed to analyze sex-related differences in risk score prediction in patients after PCI in dependence on age-determined menopause.

Methods: In this mono-center analysis, we compared frequently used risk prediction scores for post-PCI patients (GRACE [Global Registry of Acute Coronary Events], PRECISE-DAPT [PREDicting bleeding Complications In patients undergoing Stent implantation and subsequence Dual Antplatelet Therapy], NCDR-mortality and PARIS [Patterns of Non-Adherence to Anti-Platelet Regimen in Stented Patients]-thrombotic score) in male versus female post-PCI patients in dependence on menopause (age determined) and age itself. Three-year follow-up was conducted to assess the incidence of MACCE (major adverse cerebrovascular events) including all-cause mortality, myocardial infarction and stroke. Receiver operating characteristic (ROC) analysis was conducted to analyze predictive capacity of each score.

Results: 1,001 patients post-PCI were included (38% chronic coronary syndrome [CCS], 61% acute coronary syndrome [ACS]). Out of these, 765 were male and 306 were female. Women were slightly older (68.1±11.5 vs. 73.3±11.3 years, p<0.0001). Male and female patients did not differ in achieved levels of risk score below the age of 55. In contrast, in the subgroups >55 years, GRACE, PD-DAPT and NCDR Mortality scores were higher in women compared to men (GRACE – 120.5±27.89 vs. 128.5±29.97, p<0.0001; PD-DAPT – 26.46±13.13 vs. 30.66±12.76, p<0.001; NCDR Mortality – 345.79±18.33 vs. 40.8±20.62, p<0.0001). Interestingly, PARIS thrombotic score was reduced (4.02±2.28 vs. 3.6±2.3, p=0.027). After Propensity score matching for age, GRACE, PD-DAPT and NCDR Mortality did no longer differ whereby PARIS thrombotic was reduced in female patients in this analysis as well. ROC revealed a moderate predictive capacity for MACCE for all scores in this post-PCI cohort with a numerically higher predictive capacity for women (GRACEAUC – 0.625 vs. 0.662; PD-DAPTAUC 0.589 vs. 0.660, NCDR-mortalityAUC 0.625 vs. 0.667; PARIS-thromboticAUC 0.594 vs. 0.638).

Conclusion: In this single center analysis of post-PCI patients with ACS and CCS, we could reveal that the GRACE, PD-DAPT and NCDR-mortality risk scores show higher values in post-menopausal women compared to men whereby the PARIS-thrombotic score was reduced. We revealed age as major driver for this discrepancy. Moreover, women showed a numerically higher predictive accuracy for the occurrence of MACCE in line with the demonstrated worse outcome after PCI in several cohorts.