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Validity of DAPT score to predict late ischemic and hemorrhagic events in patients with ST-segment-elevation acute coronary syndrome

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Background: DAPT-score (DS) quantifies one year after stenting the risk of late ischemic and major bleeding (MB) events.

Objectives: To assess the validity of DS in patients with ST-elevation myocardial infarction (STEMI).

Methods: Linking data of "Codi-IAM" registry (an exhaustive community-wide cohort of STEMI patients), hospitalization episodes and mortality registries, the rate of acute myocardial infarction (AMI), MB, and death among 7,387 patients who were free from ischemic and MB events at 12 months after stenting, were assessed between 12 and 30 months and compared across DS strata. Event rates were also assessed through total follow up (median 53 months; Q1-Q3 40.7–67.2). DS performance to predict AMI and MB was evaluated by C statistic and goodness-of-fit tests.

Results: See Table. At 30 months mortality rate differed across DS strata (1.83% in the highest DS to 6% in the lowest DS) but not MB and AMI rates. Considering total follow up, a DS ≥ 2 vs DS < 2 was associated with higher risk of AMI (HR 1.55; 95% CI 1.18–2.04), lower risk of MB (HR 0.67; 95% CI 0.46–0.98), and lower mortality (HR 0.40; 95% CI 0.33–0.48). After recalibration goodness-of-fit improved for the ischemic model ($p=0.056$) and for the MB model ($p=0.027$) but was still suboptimal. Discrimination was modest for the ischemic model (C-statistic 0.59; 95% CI 0.54–0.65) and acceptable for MB model (C-statistic 0.65; 95% CI 0.58–0.72).

Outcomes at 30-month and at final follow up and association with strata of DAPT-score

	30-month follow up			Total follow up	
	Crude incidence rate	HR (95% CI)	p	HR (95% CI)	p
AMI	1.37 (1.13–1.67)			1	
-1 to 0 (Ref)	1.01 (0.65–1.58)	1			
1	1.59 (1.11–2.26)	1.58 (0.89–2.80)	0.12	1.44 (0.94–2.21)	0.096
2	1.36 (1–1.86)	1.43 (0.83–2.46)	0.20	1.55 (1.05–2.3)	0.029
3 to 7	1.85 (1.05–3.23)	1.99 (0.98–4.03)	0.056	3.41 (1.18–5.33)	<0.001
Bleeding event	0.72 (0.55–0.94)			1	
-1 to 0 (Ref)	0.91 (0.56–1.46)	1			
1	0.80 (0.49–1.32)	0.78 (0.40–1.54)	0.48	0.68 (0.42–1.09)	0.11
2	0.45 (0.26–0.78)	0.45 (0.22–0.91)	0.026	0.48 (0.3–0.76)	0.002
3 to 7	1.08 (0.52–2.25)	1.06 (0.45–2.53)	0.89	0.92 (0.5–1.70)	0.8

AMI: Acute Myocardial Infarction.

Conclusions: In patients with STEMI DS is associated with AMI, MB and mortality beyond 12 months after stenting, but its global performance is modest and its clinical utility might be questionable.

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DAPT and PRECISE DAPT scores in identifying patients at high bleeding risk after percutaneous coronary intervention

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Background: The optimal duration of dual anti-platelet therapy (DAPT) remains debatable and depends on the bleeding/thrombosis risk ratio. DAPT and PRECISE DAPT score were developed to identify high bleeding risk patients after percutaneous coronary intervention (PCI).

Aims: We aimed to determine the prevalence of patients at higher bleeding risk after PCI using both DAPT and PRECISE DAPT scores, and to assess the discordance between these two scores.

Methods: We performed a single center prospective study including consecutive patients who underwent PCI from Mars to September 2017. Patients were subdivided in 2 groups: stable coronary artery disease (SCAD) and acute coronary syndromes (ACS). DAPT and PRECISE scores were calculated. High bleeding risk patients were defined by DAPT score < 2 or PRECISE DAPT ≥ 25 .

Results: A total of 305 patients were enrolled into the study [SCAD (n=103, 33.8%), ACS (n=202, 66.2%)]. The mean age was 62 ± 10.7 years, and 79.7% were males. The mean DAPT and PRECISE DAPT scores were 1.85 ± 1.29 and 17.4 ± 10.9 , respectively. The prevalence of high bleeding risk was 39.7% and 23.3% according to DAPT and PRECISE DAPT scores, respectively. ACS patients had higher DAPT score (2.1 ± 1.2 vs. 1.33 ± 0.98 ; $p < 0.001$) and lower PRE-

CISE DAPT score (16.1 ± 10.5 vs. 20.1 ± 11.1 ; $p < 0.001$) in comparison with SCAD patients. The prevalence of high bleeding risk patients were higher in SCAD group than in ACS group as assessed by both DAPT and PRECISE DAPT scores [(57.3% vs. 30.7%; $p < 0.001$) and (34% vs. 17.4%; $p = 0.002$), respectively]. The two scores were discordant in 90 (29.5%) patients [32 in SCAD (31.1%) and 58 in SCA (28.7%)].

Conclusions: Despite some discordance between the two scores, both DAPT and DAPT PRECISE scores showed increased prevalence of high bleeding risk patients in SCAD in comparison with ACS patients.

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Bleeding complications, before and after introduction of ticagrelor, in real-life patients with ST-segment elevation myocardial infarction

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Background: The P2Y₁₂-receptor inhibitor ticagrelor proved better after an acute coronary syndrome in the PLATO trial, with lower rate of the combination of MI, CV death or stroke, compared to clopidogrel, without apparent increase in bleedings. However, there is a paucity of real-life data reflecting daily clinical practice, including older patients with more comorbid conditions. The aim of this study was to assess incidence of non-CABG bleeding complications, before and after introduction of ticagrelor.

Methods: In the county of Östergötland, Sweden, a clopidogrel based strategy was changed to a ticagrelor based strategy in patients with ST-elevation MI (STEMI) on the 1st of Nov 2011. From the local SWEDEHEART registry we included 660 consecutive patients (330 before and 330 after the change in strategy), diagnosed with a STEMI. Medical records were scrutinised for bleeding complications and ischemic outcomes. We report bleeding complications classified according to two established definitions (TIMI and BARC). All patients were followed over six months.

Results: There were no differences in age (69y vs 69y), sex (31 vs 32% females), hypertension, diabetes, previous MI, previous revascularisation, history of bleeding incidence, CRUSADE bleeding score, invasive treatment (99% in both groups) or discharge treatment with aspirin (98% vs 97%, $p=0.31$) or warfarin (11% vs 9%, $p=0.08$) between groups. During hospital stay there was a higher use of abx-imbab (72% vs 19%, $p < 0.001$) and lower use of tirofiban (0 vs 34%, $p < 0.001$) and bivalirudin (0 vs 24%, $p < 0.001$) during the clopidogrel based period compared to the ticagrelor based period. At discharge more patients were treated with clopidogrel before the change in treatment strategy (90% vs 21%, $p < 0.001$) and more patients were treated with ticagrelor after the change in treatment strategy (74% vs 1%, $p < 0.001$).

During hospital stay there was no significant difference in any TIMI or BARC bleedings.

In contrast, after discharge there were twice as many bleeding complications after the change to a ticagrelor based strategy (41 (13%) vs. 20 (6.5%), $p=0.005$). There were also more TIMI major/minor (18 (6%) vs 3 (1%), $p=0.001$), TIMI major (6 (2%) vs 0 $p=0.03$), BARC ≥ 2 (31 (10%) vs 11 (4%), $p=0.001$) and numerically BARC ≥ 3 (8 (2.6%) vs 2 (0.6%), $p=0.11$) bleedings with a ticagrelor based strategy.

In this cohort, no differences were observed in any of the endpoints death, MI, or stroke.

Conclusion: In STEMI patients, a ticagrelor based strategy significantly increased non-CABG bleeding complications without any apparent change in death, MI or stroke.

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Platelet function monitoring for the prediction of clinical outcomes: a pooled analysis of the randomized ARCTIC and ANTARCTIC trials

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Background: Platelet function monitoring offers the possibility to individualize antiplatelet therapy in coronary artery disease patients but failed to improve clinical outcomes in randomized clinical trials. However, high-on-treatment platelet reactivity (HPR) remains a risk factor for recurrent ischemic events and low-on-treatment platelet reactivity (LPR) is a risk factor for bleeding events.

Methods: We collected data of patients assigned to the monitoring arm of the randomized ARCTIC and ANTARCTIC trials that evaluated the platelet reactivity