



## Editorial

Bleeding risk score in Japanese patients on antiplatelets plus an anticoagulant<sup>☆</sup>

## Keywords:

Bleeding risk  
Antiplatelet therapy  
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Bleeding complications are always a concern in patients with antithrombotic therapy. The patients undergoing percutaneous coronary intervention (PCI) should be treated with dual antiplatelet therapy (DAPT) for a certain period to prevent stent thrombosis, however, patients under antiplatelet therapy (APT) are concurrently prone to bleeding. PRECISE-DAPT [1] or PARIS score [2] have recently been proposed for the assessment of bleeding risk for patients after PCI. Besides, there are some patients undergoing PCI who have to take oral anticoagulants (OAC) because of several indications such as thromboembolic prevention for atrial fibrillation (AF), mechanical valve implantation, or other concomitant diseases. In patients with AF, which is the most common indication for OAC, anticoagulation therapy is indicated based on the thromboembolic risk stratification [3]. According to the risk stratification for bleeding complications, HAS-BLED [4] or ORBIT [5] have been well established for patients with AF. However, it was unclear which scores are more predictable for bleeding complications for the patients undergoing PCI who need both APT and OAC.

In this issue, Yoshida et al. [6] evaluated four different risk scores for predicting bleeding complications in patients undergoing PCI who required both APT and OAC. They extracted the data from 3718 patients undergoing PCI in their hospital from April 2011 to March 2017. Of those, 302 patients who were concomitantly prescribed OAC with APT were enrolled in this study. They evaluated the bleeding events based on the TIMI (Thrombolysis in Myocardial Infarction) bleeding criteria [7] and BARC (Bleeding Academic Research Consortium) criteria [8].

TIMI significant bleeding events occurred in 90 patients (29.8%) and BARC class  $\geq 3$  bleeding occurred in 53 patients (17.5%) during the 3-year follow-up of this study. With those bleeding events, they retrospectively validated the aforementioned four bleeding risk scores, which respectively have the score definition of high or non-high/intermediate/low risks for bleeding complications [1,2,4,5]. Compared with the non-bleeding group, the bleeding group showed higher HAS-BLED [3.63 (SD1.16) vs. 3.13 (SD 1.04);

$p = 0.001$ ], ORBIT [2.92 (SD 1.58) vs. 2.35 (SD 1.27);  $p = 0.003$ ], and PRECISE-DAPT [32.4 (SD 16.7) vs. 26.9 (12.6);  $p = 0.002$ ], whereas the PARIS score was not significantly different [bleeding vs. non-bleeding group = 8.3 (SD 2.7) vs. 7.9 (SD 2.5);  $p = 0.26$ ]. Therefore, they concluded that HAS-BLED, ORBIT, and PRECISE-DAPT score could be more predictable for the patients with higher bleeding risk compared with PARIS score for 3-year follow-up after PCI. Although the PARIS score well predicted the bleeding events defined by TIMI criteria in the early phase of the study, the predictive value gradually decreased (described in their paper, Figure 3A) over the study period. On the other hand, according to BARC class  $\geq 3$  bleeding events, all four scores were applicable for the prediction of bleeding events in the same manner.

The important finding of this paper was that HAS-BLED, ORBIT, and PRECISE-DAPT were appropriate to evaluate the bleeding risk stratification in the patients undergoing PCI requiring both APT and OAC as well as only AF or only after PCI. Besides, by BARC class  $\geq 3$ , PARIS score was also applicable and analogous to the other three risk scores. Since bleeding definitions are slightly different in several criteria such as TIMI [7], BARC [8], ISTH [9], and GUSTO [10], the results might be changed by which criteria were used. Nonetheless, the results of this study showed the versatility of these bleeding risk scores even in the patients undergoing PCI prescribed APT with OAC.

However, caution should be exercised when assessing the bleeding risk score for these patients. As shown in Table 1, some factors associated with bleeding risk scores are also associated with thromboembolic risk factors in CHADS<sub>2</sub> [11] or CHA<sub>2</sub>DS<sub>2</sub>-VASc scores [12]; i.e. age, hypertension, and prior stroke/transient ischemic attack were included in both risk scores. Therefore, higher bleeding risk patients also tend to be classified as higher thromboembolic risk patients. Clinicians should pay attention to both risks in these patients, and consider the individual risk-benefit balance.

Moreover, bleeding complication rates might be different between US/European countries and Japan in such patients. In the WOEST trial [13], TIMI major and minor events were 31.3% in triple therapy (DAPT with warfarin) group and 14.0% in double therapy (clopidogrel and warfarin) group for 1-year follow-up after PCI. In this study of Yoshida et al. [6] TIMI significant (major and minor) bleeding rate was 29.8% for 3-year follow-up. Although direct comparisons cannot be made, the actual bleeding complication rate seems to be lower in Japanese clinical practice. An original risk score for Japanese patients with OAC undergoing PCI

**Table 1**

Summary of the factors in each risk score.

	HAS-BLED	ORBIT	PRECISE-DAPT	PARIS	CHADS <sub>2</sub>	CHA <sub>2</sub> DS <sub>2</sub> -VASc
Age	●	●	●		●	●
Hypertension	●				●	●
Stroke/TIA	●				●	●
Previous bleeding	○		○			
Liver dysfunction	○					
Renal dysfunction	○	○	○	○		
Drug concomitance	○	○		○		
Liabile INR	○					
Anemia		○	○	○		
WBC count			○			
BMI				○		
Smoking				○		
Diabetes Melitus					○	○
Heart failure					○	○
Vascular disease						○
Female						○

TIA: transient ischemic attack; BMI: body mass index; WBC: white blood cell; INR: international normalized ratio.

will be needed to assess the bleeding complication risk with consideration for the thromboembolic risks.

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