Editorial comment on The Papworth bleeding risk score: a stratification scheme for identifying cardiac surgery patients at risk of excessive early post-operative bleeding

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The problem to predict which patient is going to present with severe bleeding after cardiac surgery has been intriguing surgeons and anaesthetists for several decades. It is a difficult task since different factors, both surgical and non-surgical, contribute to postoperative bleeding. Numerous studies have attempted to identify patient characteristics and biomarkers associated with excessive blood loss; however, so far, the value of a single factor and/or laboratory test to predict excessive bleeding in individual patients has not been proven. There have also been previous attempts to construct risk scores based on combinations of patient preoperative characteristics but none of the scoring systems has gained widespread use. It is important to underline that there is a huge discrepancy between different studies trying to identify patients with increased bleeding risk regarding, for example, study populations, definitions of blood loss, end points, sampling time points, local routine in surgical and anaesthetic procedures and statistical analysis, which makes comparisons and meta-analyses troublesome.

In the present edition of *European Journal of Cardio-Thoracic Surgery*, Vuylsteke and associates present a new stratification system for identifying cardiac surgery patients at risk of excessive early postoperative bleeding, the Papworth Bleeding Risk Score (BriSC) [1]. Based on the results from over 6800 patients, an additive score was constructed where points were given for surgery priority, surgery type, aortic valve disease, body mass index (BMI) and age. The patients were then divided into three groups: a low-risk group (0 points), a medium-risk group (1—2 points) and a high-risk group (3—5 points). The score was tested in nearly 5000 patients and the results clearly demonstrate that the BriSC score was able to separate groups of patients with different bleeding risks. The prevalence of bleeding complications was 3% in the low-risk group, 8% in the medium-risk group and 21% in the high-risk group.

However, while the negative predictive value was high (3% in the low-risk group developed severe postoperative bleeding), the positive predictive value was low. Only 21% of the patients who were rated high risk did in fact bleed severely. It is thus doubtful if the score can be used to guide prophylactic treatment in individual patients. Instead, the potential of the score lies most likely in identifying groups of patients with increased bleeding risk to be included in forthcoming studies with new hemostatic drugs or methods. By including only high-risk patients in the studies, the necessary number of patients can be markedly diminished which increases the chance to demonstrate group differences and reduces study costs.

The authors should be commended for their effort to construct a new score. The BriSC score’s risk factors are easy
to assess and the score has thus potential to be more widely used than the present ones. The success of the score will be dependent upon the reproducibility of the results in other study cohorts and in other centres. Thus, new multi-centre studies are warranted.

Reference


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