Assessment of Hemostatic Risk Factors in Predicting Arterial Thrombotic Events

To the Editor:

We read with interest the excellent article by Feinbloom and Bauer outlining several key hemostatic risk factors that may be predictive of arterial thrombotic events. We do appreciate that there are a wide range of key hemostatic risk factors involved in atherothrombosis, but their article has little mention of the evolving interest into fibrin D-dimer as an index of thrombogenesis, as well as the many endothelial specific vascular markers that have been intimately related to hemostasis and thrombosis, and have been shown to predictive of future cardiovascular events.

For example, plasma von Willebrand factor (vWF) is already a well-established plasma marker of endothelial damage/dysfunction. vWF is important in mediating platelet aggregation, suggesting a possible contributory prothrombotic role. Our group has previously shown that raised levels of vWF are predictive of thrombosis-related vascular events, such as ischemic stroke among patients with atrial fibrillation, and major adverse cardiac events (MACEs) among patients presenting with acute coronary syndrome (ACS). Another endothelial marker is soluble E-selectin (sE-sel), which is an endothelial-specific membrane-bound adhesion molecule that is normally not expressed by resting endothelial cells, so raised plasma levels indicate endothelial activation. Increased sE-sel levels have also been shown to be predictive of future arterial thrombotic events.

As a relatively new “marker” predictive of thrombotic events, immunologically defined CD146-bearing circulating endothelial cells (CECs) is rapidly gaining ground as a novel and specific endothelial marker. CECs are thought to represent mature endothelial cells or endothelial cell fragments that have detached (or have been driven from) the mural endothelium in response to a particular injurious process(es). Our group has recently shown that endothelial specific CECs measured from peripheral venous blood at 48 hours were the only independent predictor of death and MACE at 30 days and 1 year among a cohort of 156 patients presenting with ACS.

We would also highlight interest into fibrin D-dimer, which has long been proposed as a useful clinical marker of thrombogenesis.

In atrial fibrillation, which is a common arrhythmia associated with a substantial risk of stroke and thromboembolism, high levels of fibrin D-dimer, even despite oral anticoagulation therapy, are significant predictors of cardiovascular events. Similar observations on the prognostic value of fibrin D-dimer in peripheral artery disease have long been noted.

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