It Is Time to End the Dualistic Short Versus Long Duration of Dual Antiplatelet Therapy Debates

Glenn N. Levine, MD
Eric R. Bates, MD

At every national and international cardiology meeting, there is at least 1 obligate dualistic debate on whether duration of dual antiplatelet therapy (DAPT) in all patients treated with coronary stent implantation should be short or long. This binary approach is similarly played out in the literature. Although we recognize the usefulness of different intellectual perspectives, as well as the entertainment value of such debates, we believe that the time for debating has passed. Rather, it is time to acknowledge that some patients may best be treated with a short duration of DAPT, some with a standard duration of DAPT, and some with a longer or prolonged duration of DAPT. We should now direct our energies toward identifying these subgroups. Decisions on DAPT duration for any individual patient must be based not on dogmatic or blind adherence to a study result, meta-analysis, or even guideline recommendation but on a thoughtful and informed ongoing assessment of the benefits and risks of DAPT for that particular patient (Figure), as well as patient preference.

This dualistic short versus long debate ignores the fact that many patients with comparable ischemic and bleeding risk may best be treated by a standard duration of DAPT (as denoted by guideline Class I recommendations). A simple examination of number needed to treated and number needed to harm highlights the fact that in all clinical trials of a drug or treatment strategy, the majority of patients will be neither benefited nor harmed by the new drug or treatment strategy. It is thus critical to identify those factors associated with an increased probability of benefit or increased risk of harm and those patients who are most likely to benefit from either a short or long duration of DAPT.

A multitude of patient and procedural factors have been demonstrated to increase the risk of stent thrombosis, including acute coronary syndrome, diabetes mellitus, type of stent, small stent diameter, stent underdeployment, treatment for in-stent restenosis or saphenous vein graft stenosis, and complex percutaneous coronary intervention.[1–3] Furthermore, in addition to the risk of stent thrombosis, the consequences of stent thrombosis must be factored into decisions about the duration of DAPT. Thrombosis of a stent implanted in an unprotected left main coronary artery will have far more dire consequences than thrombosis of a stent implanted in a distal obtuse marginal artery.

As with stent thrombosis, the presence (or absence) of risk factors for future myocardial infarction (MI) affects the estimated ischemic risk. The risk of future spontaneous MI is increased in patients with advanced age, prior coronary plaque rupture, extensive coronary artery disease, diabetes mellitus, current cigarette smoking, and chronic kidney disease.[1–3]

Factors associated with increased bleeding risk include history of prior bleeding, oral anticoagulation, chronic steroid or nonsteroidal anti-inflammatory drugs, female sex, advanced age, low body weight, chronic kidney disease, diabetes mellitus, and anemia.[1–3]

Correspondence to: Glenn N. Levine, MD, Section of Cardiology (3c-330), Michael E. DeBakey VA Medical Center (111B), 2002 Holcombe Blvd, Houston, TX 77030. E-mail glevine@bcm.tmc.edu

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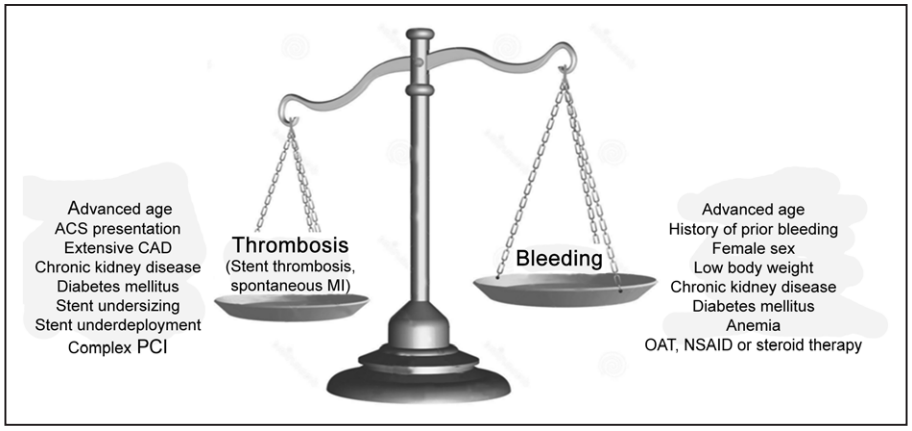

Figure. Factors associated with an increased risk of ischemia (stent thrombosis, spontaneous myocardial infarction [MI]) and bleeding.

ACS indicates acute coronary syndrome; CAD, coronary artery disease; NSAID, nonsteroidal anti-inflammatory drugs; OAT, oral anticoagulant therapy; and PCI, percutaneous coronary intervention.

Thus, at the individual patient level, there is a broad spectrum of ischemic and bleeding risk. In an analysis based on data from the TRILOGY ACS trial (Targeted Platelet Inhibition to Clarify the Optimal Strategy to Medically Manage Acute Coronary Syndromes), the estimated risk of future MI was predicted to vary 6-fold between those with low and those with very high calculated risk of future MI.[4] Analysis of data from the PARIS Registry (Patterns of Nonadherence to Antiplatelet Regimens in Stented Patients) showed there was a 5- to 8-fold difference in 2-year thrombotic risk (stent thrombosis or MI) between those categorized by a risk prediction tool as low risk and those categorized as high risk.[2] As with thrombotic risk, there is a broad spectrum of estimated risk of future bleeding complications. Whereas the predicted risk of bleeding over several years may be 2.4% in those with low risk, it may be 9.4% or higher in those with high risk.[2] Analyses from the Dual Antiplatelet Therapy trial found that in those with a high (≥2) DAPT score, there was an 8.2-times greater reduction in thrombotic events than increase in bleeding events in those randomized to extended (prolonged) DAPT, whereas in those with a low (<2) DAPT score randomized to extended DAPT, there was an absolute increase in bleeding events 2.4 times the absolute reduction in thrombotic events.[3]

The recently updated American College of Cardiology/American Heart Association guidelines on DAPT duration recognizes that the benefit/risk ratio will vary from patient to patient and gives practitioners options for shorter, standard, or longer duration of therapy.[1] Simple algorithms guide practitioners on DAPT duration options based on clinical setting (stable ischemic heart disease versus acute coronary syndrome), type of stent implanted, and bleeding and ischemic risk.

Individualized care based on benefit/risk balance may be facilitated by clinical decision tools. The DAPT score and PARIS Registry risk scores facilitate an assessment of ischemic/bleeding risk balance using simple patient, procedural, and clinical variables.[2,3] Based on 9 variables, the DAPT score allows one to easily calculate, after 1 year of DAPT, whether further prolonged DAPT is likely to have net benefit.[3] The PARIS Registry risk scores allow one to categorize thrombotic and bleeding risk as low, intermediate, or high.[2] The PRECISE-DAPT (Predicting Bleeding Complications in Patients Undergoing Stent Implantation and Subsequent Dual Antiplatelet Therapy) score allows an assessment of 12-month bleeding risk specific to the use of DAPT.[5] The HAS-BLED (Hypertension, Abnormal Renal/Liver Function, Stroke, Bleeding History or Predisposition, Labile INR, Elderly, Drugs/Alcohol Concomitantly) score estimates bleeding risk in patients requiring treatment with antiplatelet and oral anticoagulant therapy. No clinical decision tool is perfect. The DAPT, PARIS Registry, and PRECISE-DAPT risk scores have a moderate but not high level of discrimination. Nevertheless, these are important steps toward individualizing care based on risk.

It is an inconvenient yet unavoidable fact that addition, intensification, and prolongation of dual antiplatelet therapy necessitate a tradeoff between a decrease in ischemic events, namely spontaneous MI and stent thrombosis, and an increase in bleeding complications.[1] We must accept this as a treatment conundrum when considering duration of DAPT. For some patients, the benefit/risk ratio will favor shorter or standard DAPT. For others, the benefit/risk ratio will favor longer therapy. We must therefore shift our focus of attention away from dualistic short versus long thinking. Rather, we must now focus our research and scientific discussions on which patients are best treated with short-duration DAPT, standard-duration DAPT, or prolonged DAPT. It is time to end the academic debate and begin the clinical discussion.

DISCLOSURES

None.

AFFILIATIONS

From Baylor College of Medicine and Michael E. DeBakey VA Medical Center, Houston, TX (G.N.L.); and University of Michigan, Ann Arbor (E.R.B.).

FOOTNOTES

The podcast and transcript are available as an online-only Data Supplement at http://circ.ahajournals.org/lookup/suppl/doi:10.1161/CIRCULATIONAHA.117.028497/-/DC1.

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