Tirofiban shows better platelet inhibition in diabetic patients during PCI procedures

The extent of platelet aggregation and levels of C-reactive protein (CRP) released during actual percutaneous coronary intervention (PCI) procedures have not been well studied.

In this recently published randomised, double-blind study of consecutively eligible patients, rapid-function platelet assays were used to measure platelet aggregation, together with simultaneous measurement of CRP, to compare the efficacy of platelet inhibition of tirofiban and abciximab. Clinical endpoints of the study were death, non-fatal MI, target vessel revascularisation (TVR) with coronary artery bypass grafting or PCI within 30 days of the procedure.[1]

Tirofiban showed greater platelet inhibition in the diabetic patients at the first time point within the PCI procedure. Overall platelet inhibition was similar with the two agents, but there was a trend towards less effective platelet inhibition with abciximab.

Interestingly, measurement of the inflammatory marker, CRP, was similar with both drugs, but these measurements were characterised by a wide variability during the procedure. However, hs-CRP demonstrated an inverse relationship with platelet inhibition over time. The clinical outcomes in the two groups were similar but the small numbers of patients limited the definitive assessment of any difference in the clinical impact of these agents.

The study medications were administered as a bolus plus infusion for two hours, together with heparin, to achieve a target activated clotting time of 200–250 sec/i. Abciximab was dosed as 0.25 μg/kg bolus given immediately before the PCI, followed by 0.125 μg/kg/min (max 10 mg) for 12 hours. A 10-μg/kg bolus of tirofiban was given, followed by a 0.15-μg/kg/min infusion for 12 hours.

This 'real-world' situation, although without the recently recommended 25-μg/kg bolus dose of tirofiban, points to the value of achieving steady state before beginning PCI and maintaining this over time. This study was the first to assess CRP levels during a PCI procedure, and an inverse relationship was seen with levels of hs-CRP to platelet inhibition.

J Aalbers, Special Assignments Editor

1. Saltzman AJ, *et al*. The relative effects of abciximab and tirofiban on platelet inhibition and C-reactive protein during coronary intervention. *J Invas Cardiol* 2010; **22**(1): 2–6.

Aspirin in primary prevention: USPSTF recommendations

Recent clinical studies such as the Japanese Primary Prevention trial (JPAD)[1] and the Aspirin for Asymptomatic Atherosclerosis study (AAA)[2] have resulted in considerable debate on when and for whom aspirin should be given as primary prevention for vascular events.

The US Preventative Services Task Force (USPSTF) has recently updated its recommendations from new evidence on the benefit and harm of aspirin for the primary prevention of cardiovascular disease, including myocardial infarction and stroke.[3] All their recommendations are allocated a graded level to indicate the extent of data available to support the advocated approach in both adult men and women without a history of coronary artery disease or stroke.

TABLE 1. TEN-YEAR CHD RISK LEVELS AT WHICH THE NUMBER OF CVD EVENTS PREVENTED IS CLOSELY BALANCED TO THE NUMBER OF SERIOUS BLEEDING EVENTS

Men		*Women*	
Age (years)	*10-year CHD risk (%)*	*Age (years)*	*10-year stroke risk (%)*
45–59	≥ 4	55–59	≥ 3
60–69	≥ 9	60–69	≥ 8
70–79	≥ 12	70–79	≥ 11

Adapted from *Ann Intern Med* 2009; **150**(6): 396–404.

In men, the USPSTF recommends the use of aspirin for men aged 45 to 79 years when the potential benefit due to a reduction in myocardial infarctions outweighs the potential harm due to an increase in gastrointestinal bleeding. In younger men (45–59 years), the benefits outweigh the increased bleeding at a 10-year coronary heart disease (CHD) risk of greater than 4%. In the older age group, under 80 years, the benefit–risk ratio is at 9 to 12% of the 10-year cardiovascular risk as measured by a Framingham Heart study-derived risk-assessment tool.[4]

In women, the USPSTF recommends the use of aspirin for women aged 55 to 79 years when the potential benefit of a reduction in ischaemic strokes outweighs the bleeding risk. In women aged 55 to 59 years, estimated harm is balanced by benefit at a 2% 10-year stroke risk; which rises to 11% in the age group 60 to 69 years and 17% in the under 80-year-old group. Table 1 summarises these benefit–risk balances.

A key issue for the practising clinician is when to recommend against taking aspirin. In an editorial in the *Annals of Internal Medicine*,[5] Mehta pointed out that the rule of benefit outweighing risk assumes that patients place the same value on avoiding a bleeding event as they do on avoiding a stroke or myocardial infarction. Depending on where the bleeding occurs, some patients would rather avoid a stroke than avoid a bleeding event and would therefore prefer to take aspirin. Discussing benefits and risks with the individual patient is therefore essential. Clearly also, patients at relatively high risk for intracranial bleeding should absolutely avoid aspirin.

Aspirin is still underused and these USPSTF recommendations should assist clinicians to extend the benefits of aspirin to more patients.

J Aalbers, Special Assignments Editor

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2. ESC Congress 2009. Fowkes FGR. For the Aspirin for Asymptomatic Atherosclerosis Trialists.
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4. Wilson PW, D'Agostino RB, Levy D, Belanger AM, Silbershatz H Kannel WB. *Circulation* 1998; **97**: 1837–1847.
5. US Preventative Services Task Force. *Ann Intern Med* 2009; **150**: 414–416.