Abciximab Suppresses the Rise in Levels of Circulating Inflammatory Markers After Percutaneous Coronary Revascularization

To the Editor:

We read with interest the article by Lincoff et al. Abciximab is thought to be superior to other glycoprotein IIb/IIIa inhibitors in the context of percutaneous coronary intervention (PCI) for acute coronary syndromes (ACS). The study by Lincoff et al highlights a potential novel mechanism by which this may occur—namely, inhibiting leukocyte αMβ2 receptors. Patients with elevated C-reactive protein (CRP) have a higher proportion of activated monocytes and a greater capacity to generate IL-6 in the context of ACS. Because there was no baseline difference in CRP and IL-6 levels between placebo and abciximab treatment groups, the proportion of activated monocytes was similar in the 2 groups. The process of PCI, therefore, generates an inflammatory response that is reduced by abciximab.

An alternative explanation for the results is the inflammatory response to myocardial necrosis. Even uncomplicated elective PCI procedures are accompanied by a rise in cardiac troponins. Even a small myocardial injury, such as occurs with angioplasty, may be accompanied by a modest rise in cardiac troponins. If the rise in levels of circulating inflammatory markers after PCI is due to myocardial necrosis, then abciximab should have a differential effect on markers of inflammation and markers of myocardial necrosis. In the study by Lincoff et al, the proportion of patients with a rise in cardiac troponins was similar in the 2 treatment groups. The rise in CRP and IL-6 levels between the 2 groups are seen. Thus, the rise in CRP and IL-6 levels in PCI by reducing myocardial damage rather than by a direct antiinflammatory action. Procedures such as directional atherectomy have certainly been shown in several studies to increase the incidence of periprocedural myocardial infarction. Among the 160 patients in our EPIC substudy, 11 of 80 (14%) and 14 of 80 (18%) underwent atherectomy in the placebo and abciximab groups, respectively. When these patients were excluded from consideration, the principal findings of the study were unchanged; the rise in levels of CRP, IL-6, and TNF-α were substantially lower over the 24 to 48 hours after coronary intervention among patients treated with abciximab compared with placebo. This suppression of periprocedural ischemic events below the threshold of clinically detectable myocardial necrosis may have accounted for some of the effect of abciximab on inflammatory responses.

Accordingly, it is possible that abciximab may reduce distal embolization and thus the degree of myocardial infarction among patients treated with abciximab.

Could the authors clarify whether there was a difference in the 24-hour troponin levels between the placebo and abciximab treatment groups and whether the proportion of patients undergoing atherectomy was similar? The results seen can only be attributed to the inhibition of the αMβ2 receptor if no differences in troponin levels between the 2 groups are seen.

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Response

We appreciate the comments on our article by Dr Ray, who makes the very relevant point that part of the antiinflammatory effect of abciximab may have been mediated by a reduction of myocardial necrosis. In our paper, we reported that the findings of the study were unchanged if patients suffering postprocedural myocardial infarction were excluded. However, inflammatory marker levels may have also been influenced by necrosis below the threshold of detection with creatine kinase-MB. This limitation was acknowledged in the paper, where we noted that “. . . suppression of periprocedural ischemic events below the threshold of clinically detectable myocardial necrosis may have accounted for some of the effect of abciximab on inflammatory responses.”

Abciximab reduces thrombosis in PCI, which may have a direct antiinflammatory action. Procedures such as directional atherectomy have certainly been shown in several studies to increase the incidence of periprocedural myocardial infarction. Among the 160 patients in our EPIC substudy, 11 of 80 (14%) and 14 of 80 (18%) underwent atherectomy in the placebo and abciximab groups, respectively. When these patients were excluded from consideration, the principal findings of the study were unchanged; the rise in levels of CRP, IL-6, and TNF-α were substantially lower over the 24 to 48 hours after coronary intervention among patients treated with abciximab compared with placebo. Thus, although an effect mediated by suppression of periprocedural myocardial infarction cannot be excluded, the available evidence from this trial suggests a predominantly direct antiinflammatory effect of abciximab.

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