THERAPEUTICS

Review: Platelet glycoprotein IIb/IIIa blockers for PCI or acute coronary syndromes reduce death and MI but increase bleeding

Bosch X, Marrugat J. **Platelet glycoprotein IIb/IIIa blockers for percutaneous coronary revascularization, and unstable angina and non-ST-segment elevation myocardial infarction.** Cochrane Database Syst Rev. 2001;(4):CD002130 (latest version 24 Aug 2001).

QUESTION

In patients who have had percutaneous coronary intervention (PCI) or who have unstable angina or non–ST-segment elevation myocardial infarction (NSTEMI), are platelet glycoprotein (GP) IIb/IIIa blockers effective for reducing death or myocardial infarction (MI)?

DATA SOURCES

Studies were identified by searching MEDLINE (to June 2001), EMBASE/Excerpta Medica (to November 1999), the Cochrane Library, conference abstracts, and bibliographies of reviews and by contacting experts.

STUDY SELECTION

Studies were selected if they were randomized controlled trials that compared GP IIb/IIIa blockers with placebo in patients who received standard medical treatment and PCI with or without stent placement and in those with unstable angina or NSTEMI.

DATA EXTRACTION

Data were extracted on patient and study characteristics, interventions, and outcomes (mortality, MI, and adverse events).

MAIN RESULTS

22 studies met the selection criteria. GP IIb/IIIa blockers were better than standard medical treatment for reducing mortality at 30 days (14 studies; 2 studies were excluded from the meta-analysis) but not at 6 months (9 studies) and mortality or MI at 30 days (14 studies) and 6 months (9 studies) in patients who had PCI with or without stenting (Table). More patients in the GP IIb/IIIa–blocker group than the control group had bleeding (Table). In patients with unstable angina or NSTEMI, GP IIb/IIIa blockers reduced the combined end point of mortality and MI at 30 days (8 studies) and 6 months (4 studies) but increased bleeding (Table). Mortality at 30 days (8 studies) and 6 months (3 studies) did not differ between groups (Table).

CONCLUSIONS

In patients having percutaneous coronary intervention, platelet glycoprotein (GP) IIb/IIIa blockers reduce 30-day mortality and the combined end point of mortality and myocardial infarction (MI) but increase bleeding. In patients with unstable angina or non–ST-segment elevation MI, GP IIb/IIIa blockers reduce the combined end point of death and MI but increase bleeding.

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Platelet glycoprotein IIb/IIIa blockers (intervention) vs standard medical treatment (control) for coronary artery disease*

Patient group	Outcomes	Weighted event rates		RRR (95% CI)	NNT (CI)
		Intervention	Control		
Primary PCI	Death at 30 d	0.9%	1.2%	29% (4 to 47)	Borderline significance
	Death at 6 mo	1.8%	2.1%	14% (–10 to 33)	Not significant
	Death or MI at 30 d	5.5%	8.7%	36% (29 to 43)	32 (25 to 42)
	Death or MI at 6 mo	7.6%	11%	32% (25 to 39)	28 (22 to 39)
UA/NSTEMI	Death at 30 d	3.3%	3.6%	9% (–2 to 20)	Not significant
	Death at 6 mo	6.4%	6.4%	1% (–12 to 15)	Not significant
	Death or MI at 30 d	11%	12%	8% (1 to 13)	112 (63 to 500)
	Death or MI at 6 mo	13%	15%	11% (4 to 17)	63 (39 to 167)
				RRI (CI)	NNH (CI)
PCI	Bleeding at 30 d	4.5%	3.2%	39% (19 to 62)	77 (56 to 143)
UA/NSTEMI	Bleeding at 30 d	4.4%	3.6%	24% (11 to 39)	125 (84 to 250)

*MI = myocardial infarction; NSTEMI = non–ST-segment elevation acute MI; PCI = percutaneous coronary intervention; UA = unstable angina. Other abbreviations defined in Glossary; RRR, RRI, NNT, NNH, and CI calculated from data in article.

COMMENTARY

The conclusions of the pooled analysis by Bosch and Marrugat are reasonable, although the methodology is limited by combining studies with different patient characteristics, GP IIb/IIIa inhibitors, adjunctive therapies, doses, timing of revascularization, and end-point definitions.

The platelet GP IIb/IIIa receptor inhibitors seem to have a larger effect in patients who have had PCI than in those with acute coronary syndromes (unstable angina and NSTEMI). One explanation may be that aspirin, heparin, and GP IIb/IIIa inhibition are started before vascular injury in PCI but hours after vascular injury in unstable angina or NSTEMI. Another explanation is that many patients with unstable angina are misdiagnosed and do not have acute vascular injury, which dilutes the treatment benefit seen when patients with vascular injury are treated with antithrombotics. In fact, all of the studies looking at troponin values have shown treatment benefit in troponin-positive (NSTEMI) patients but not in troponin-negative (unstable angina) patients.

Cost is probably the only reason GP IIb/IIIa inhibitors are not used in all patients having PCI, although shorter infusion duration and use of eptifibatide and tirofiban instead of abciximab reduce the cost per patient from approximately U.S. $1500 to < $500. In patients with acute coronary syndromes, treatment can probably be limited to those with recurrent angina who are receiving aspirin and heparin or those with dynamic ST-segment changes or elevated troponin values. It seems that PCI amplifies the benefit of GP IIb/IIIa inhibition in patients with NSTEMI, and this treatment strategy is becoming the standard of care (1).

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Reference

1. **Cannon CP, Weintraub WS, Demopoulos LA, et al.** N Engl J Med. 2001;344:1879-87.

