Pretreatment with Antiplatelet Agents in the Setting of Percutaneous Coronary Intervention

When and Which Drugs?

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KEYWORDS

• Pretreatment • Preloading • Clopidogrel • Prasugrel • Ticagrelor • Cangrelor

KEY POINTS

- The evidence supporting pretreatment with clopidogrel in patients with stable coronary artery disease intended for percutaneous coronary intervention is weak.
- Patients with non–ST-segment–elevation acute coronary syndromes should not receive prasugrel before the coronary anatomy has been defined.
- European Society of Cardiology guidelines recommend that patients with ST-segment–elevation myocardial infarction should receive a $P2Y_{12}$ inhibitor as early as possible after the initial diagnosis.
- American College of Cardiology/American Heart Association guidelines recommend that patients with ST-segment–elevation myocardial infarction receive a $P2Y_{12}$ as early as possible or at the time of primary percutaneous coronary intervention.
- Intravenous cangrelor is a new treatment option for patients who have not been orally pretreated with $P2Y_{12}$ inhibitors.

INTRODUCTION

In patients undergoing coronary angiography with intent to undergo percutaneous coronary intervention (PCI), the term *pretreatment* typically refers to a variety of modalities of antiplatelet inhibitor(s) intake, including common clinical scenarios in which the drug (ie, aspirin, a $P2Y_{12}$ inhibitor, or a glycoprotein IIb/IIIa inhibitor [GPI]) is given before definition of the coronary anatomy (ie, in the ambulance, in the emergency department, in a peripheral hospital without a catheter laboratory, or in a primary hospital with a catheter laboratory before coronary angiography and/or PCI).[1]

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Early administration of antiplatelet drugs has advantages and disadvantages (Fig. 1). Platelet inhibition may be crucial to prevent the occurrence of thrombotic complications during and after PCI. However, stacking antithrombotic drugs—as frequently occurs in the setting of acute coronary syndromes (ACS)—may increase the risk of bleeding, which may be potentially fatal. This risk proves unnecessary and possibly unacceptable when patients initially thought to have coronary artery disease finally receive an alternative diagnosis or when they require prompt coronary artery bypass grafting. As such, pretreatment with antiplatelet agents is a frequent and controversial dilemma in clinical practice.[2–4] This article summarizes the current evidence on pretreatment with $P2Y_{12}$ inhibitors in the setting of PCI. Pharmacologic characteristics of these drugs are summarized in Table 1. A description of issues related to pretreatment with other established antiplatelet drugs (ie, aspirin) or drugs whose routine use upstream is discouraged (GPIs[5]) goes beyond the scope of this article.

PRETREATMENT WITH $P2Y_{12}$ INHIBITORS IN PATIENTS WITH STABLE CORONARY INTERVENTION UNDERGOING PERCUTANEOUS CORONARY INTERVENTION

Should Clopidogrel Be Given Before Percutaneous Coronary Intervention?

The CREDO (Clopidogrel for the Reduction of Events During Observation) trial failed to show a significant 28-day benefit of preloading with a 300-mg dose of clopidogrel compared with no preloading. However, in the same trial, there was a borderline significant 39% relative benefit in patients who received clopidogrel loading at least 6 hours before PCI, with no interaction depending on the clinical presentation (ACS vs no ACS).[6] On the other hand, a post-hoc analysis of CREDO found that it takes more than 15 days for the benefit of clopidogrel 300-mg loading to become clinically superior to that of placebo.[6,7] Although these findings seem to support the practice of early clopidogrel use before PCI, CREDO cannot be considered a true pretreatment study because of inclusion of patients mostly selected after coronary angiography

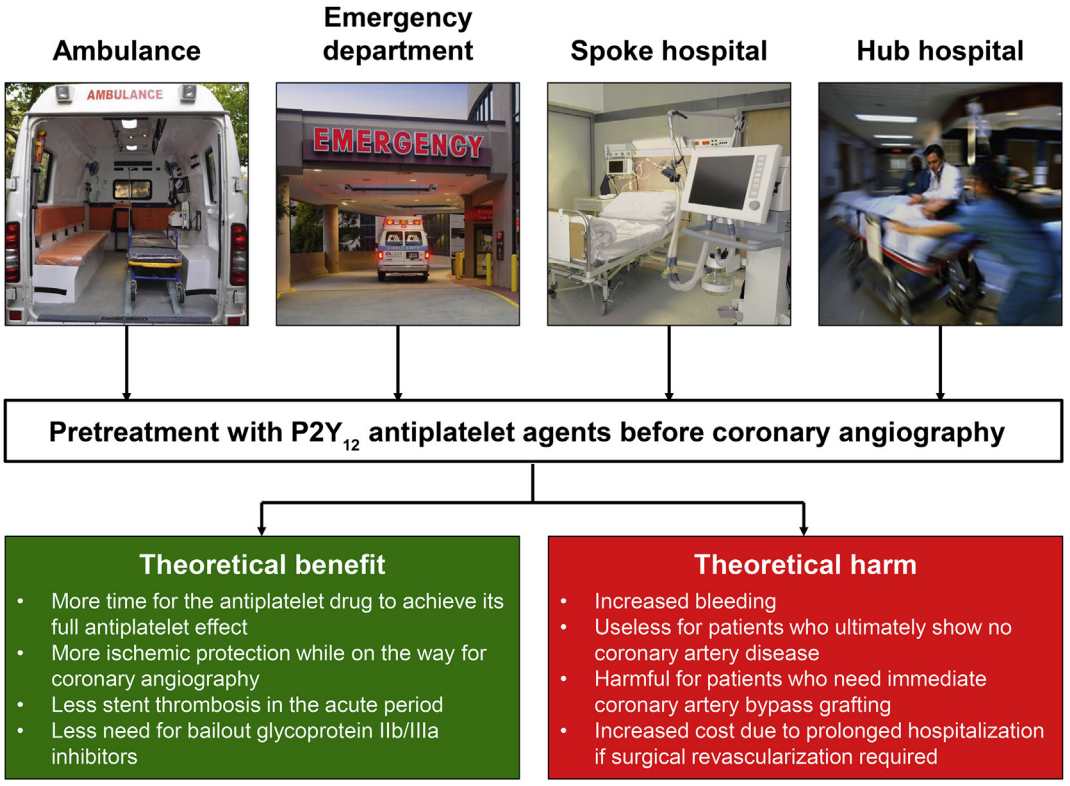

Fig. 1. Potential advantages and disadvantages of pretreatment with $P2Y_{12}$ inhibitors.