Clinical Research

In-hospital outcome of elderly patients with acute coronary syndromes treated with platelet glycoprotein IIb/IIIa blockers

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Background and objective The safety of intravenous glycoprotein IIb/IIIa inhibitors (GPI) in elderly patients admitted with acute coronary syndrome (ACS) has not yet been established. The purpose of this study was to evaluate the safety of GPI in elderly patients with ACS. Methods Ninety consecutive patients ≥70 years of age admitted to a county hospital between 1999-2004 were included. All patients had typical ACS symptoms along with high-risk markers. Results There was no difference in the TIMI risk score between patients who received GPI (n=47) and those who did not (n=43). Patients who received GPI had a lower creatinine clearance (40 cc/min vs. 47 cc/min, p=0.04). Patients who received GPI had a lower incidence of death, reinfarction or major bleeding (19% vs. 4%, p=0.03). There was no significant difference in major bleeding between the 2 groups. None of the patients in either group developed thrombocytopenia. Conclusion This retrospective small study suggests that the use of GPI in a selected group of elderly patients with acute coronary syndrome may be safe. (J Geriatr Cardiol 2005; 2(4):203-205)

Key words: acute coronary syndromes; antiplatelet therapy; elderly; bleeding

Introduction

Glycoprotein IIb/IIIa inhibitors are potent blockers of platelet aggregation, irrespective of the initiating pathway. The use of GPI in patients undergoing percutaneous coronary intervention (PCI) or those admitted with ACS and high risk markers reduces adverse cardiac events and improves clinical outcomes. Despite evidence favoring the use of GPI in patients presented with ACS, clinicians seem to be hesitant to use these drugs in elderly patients. This may be due in part to the paucity of data on elderly patients included in clinical trials for ACS in conjunction with the general fear that the risks of potent antiplatelet inhibition may increase bleeding complications, and therefore outweigh their potential benefit. The purpose of this retrospective analysis is to evaluate the impact of the small molecule GPI on the outcome in elderly patients admitted with ACS.

Patients and Methods

Patients

Ninety consecutive patients ≥70 years admitted to the coronary care unit at a county hospital with ACS, between January 1999 and July 2004 were included. Patients who had a history of bleeding diathesis, history of stroke or creatinine clearance <30 cc/min were excluded. Acute coronary syndrome was defined as typical symptoms with either >1 mm ST depression in 2 contiguous leads or positive markers of cardiac necrosis on admission.

GPI administration

All patients received aspirin (325 mg) on admission. Forty-seven patients received GPI within 8±5 hours from admission per the discretion of the admitting physician. The mean infusion time was 34±4 hours. All GPI-treated patients received tirofiban at 0.4 mcg/kg/min bolus over 30 minutes followed by a 0.1 mcg/kg/min infusion for a minimum of 24 hours, or for 12 hours after PCI.

Major and minor bleeding was defined as per the TIMI criteria. Thrombocytopenia was defined as a platelet count of less than 100,000/mm².

Statistics

Results are given as percentages, mean ± standard deviation or median. Quantitative variables were analyzed using the unpaired Student’s two-sided t-test. Categorical data was analyzed using the Fisher exact test. Because troponin, CK and CK-MB do not have normal distribution, a Wilcoxon rank sum test was used. Univariate and multivariate regression analyses were done to determine the significance of baseline variables on composite endpoint of death, myocardial infarction.
and major bleeding.

**Results**

**Patient characteristics**

The baseline characteristics of the treatment group (n=47) and the non-treatment group (n=43) are shown in Table 1. Creatinine clearance was higher in the treatment group compared to the non-treatment group (47±8 vs. 40±6 cc/min, p=0.04). There was no difference in the ACS-TIMI risk score between the 2 groups. Similarly, there was no difference in the number of patients receiving beta-blockers, nitrates, aspirin, clopidogrel or ACE-inhibitors. The mean peak partial thromboplastin time (PTT) for the non-treatment group was 79±34 seconds (median 83) compared to 64±25 seconds (median 65) in the treatment group (p=0.04). The mean dose of unfractionated heparin (UFH) was 91±112 units vs. 695±142 units in the treatment group (p=0.02). Fifty-eight percent of the patients in the non-treatment group had a peak PTT in the supratherapeutic range (>75 seconds) compared to 34% in the treatment group (p=0.05). Twenty-two out of 47 (47%) patients underwent PCI in the treatment group vs. 18 out of 43 (42%) in the non-treatment group (p=0.6). All patients who received PCI were placed on clopidogrel.

**Clinical outcomes and complications**

Only one out of 47 (2%) patients had a major gastrointestinal bleeding in the treatment group compared to 4 out of 43 patients (9%) in the non-treatment group (p=1.0). Major bleeding in the latter group was due to intracranial bleeding in one patient, gastrointestinal bleeding in 2 patients and a large groin hematoma in one patient. There was a nonsignificant increase in minor bleeding in the treatment group (26% vs. 14%, p>0.05). No patient developed thrombocytopenia in either group. One patient in the non-treatment group died from cardiogenic shock compared to none in the treatment group. The incidence of death, reinfarction, or major bleeding was 4% in the treatment group compared to 19% in the non-treatment group (p=0.03). There was no difference in length of hospital stay between the 2 groups. On multivariate analysis, the use of GPI (p=0.002) and creatinine clearance (p=0.03) were predictors of the combined endpoint of death, reinfarction and major bleeding.

**Discussion**

The safety of GPI in the elderly has not yet been routinely established. There are a number of anatomic and physiologic changes that occur with aging. Elderly patients have altered pharmacokinetics, frequent comorbidities and more severe coronary artery disease with a higher complication rate compared to younger patients. Elderly patients have been recognized to have a higher risk profile than younger patients and therefore, they may derive greater benefit from the newer potent anticoagulants.

In our study, the use of tirofiban in elderly patients admitted with ACS resulted in a lower incidence of in-hospital mortality, reinfarction or major bleeding. It is conceivable that more rigorous monitoring of PTT levels and better baseline renal function in the treatment group may have contributed to the low incidence of major bleeding in the treatment group. As expected, the use of GPI in our study was associated with minor bleeding without increasing the need for blood transfusions. This study was consistent with previous
publications suggesting that the use of GPI decreases the incidence of reinfarction in ACS.

In conclusion, this retrospective single-center study suggests that the use of GPI in elderly patients is not associated with increased bleeding complications especially with careful dosing of unfractionated heparin, and it may confer clinical benefits. The main limitations of the study are its small size and its retrospective nature. The patients in the non-treatment group had worse renal function which may have contributed to their poor outcome.

References