Introduction

Clopidogrel and low-dose aspirin can prevent recurrent ischemic events after a percutaneous coronary intervention. However, many patients on dual antiplatelet therapy still have thrombotic events and MACES.

Recently, some studies found that the frequent genetic functional variant 681 G>A (*2) of cytochrome P450 2C19 (CYP2C19) is an important contributor to the wide variability between individuals of the antiplatelet effect of clopidogrel.

We wanted to assess whether the CYP2C19*2 polymorphism affected long-term prognosis of Chinese patients who were treated with clopidogrel after percutaneous coronary intervention (PCI).

Methods

Between January 1, 2009 and August 31, 2009, 267 Patients who received PCI and were exposed to clopidogrel treatment for almost 12 months, were enrolled in Fu Wai Hospital and underwent CYP2C19*2 determination by MALDI-TOF MS.

The primary endpoint was angina recurrence, myocardial infarction, urgent coronary revascularization, stent thrombosis occurring during exposure to clopidogrel and the combined end events including myocardial infarction, urgent coronary revascularization, stent thrombosis.

Results

The patients were grouped CYP2C19*1/*1 (n=130), CYP2C19*1/*2(n=111) and CYP2C19*2/*2(n=26) by genotype, and baseline characteristics were balanced among the three groups.

Urgent coronary revascularization occurred more frequently in CYP2C19*2/*2 and CYP2C19*1/*2 than in CYP2C19*1/*1(3 vs 7 vs 2, P<0.05). There were no significant difference among three groups with myocardial infarction, stent thrombosis and death (P>0.05).

The combined end points also occurred more frequently in CYP2C19*2/*2 and CYP2C19*1/*2 than in CYP2C19*1/*1 (4 vs 7 vs 3, P<0.05).

Discussion

CYP2C19 has a key role in activating metabolite of clopidogrel. CYP2C19 catalytic efficiency is mainly affected by the CYP2C19*2 polymorphism in exon 5, which results in a truncated and non-functional enzyme by creating an aberrant splice site.

Results from our study have shown that CYP2C19*2 polymorphism greatly affects clinical outcome in Chinese CHD patients on clopidogrel treatment with one year follow-up.

CYP2C19*2 genetic variant is probably a major determinant of prognosis in Chinese patients with cardiac heart disease (CHD) who are receiving clopidogrel treatment after PCI. CYP2C19*2/*2(homozygous) brings a worse influence than CYP2C19*1/*2(heterozygous).