

Association of the Polymorphism in the Drug Transporter Gene ABCB1 with in Stent Restenosis of Paclitaxel Eluting Stents in the Korean Subjects

Ji Hyun Lee¹, Chul Min Ahn², Sungha Park², Yangsoo Jang², Min Goo Lee¹

Departments of ¹Pharmacology, ²Cardiovascular Center,
Division of Cardiology, Yonsei University College of Medicine, Korea

Background: Paclitaxel eluting stents are associated with angiographic restenosis rate of 11.7~13.1%. Neointimal hyperplasia after Paclitaxel eluting stent insertion may be mediated by increasing drug resistance involving the ATP binding cassette sub-family B member 1 (ABCB1, also known as MDR1 and P-glycoprotein 170). We investigated the possibility of the association of ABCB1 gene polymorphism with the stent restenosis in Korean subjects undergoing paclitaxel eluting stent insertion.

Methods: The study included 106 patients with symptomatic coronary artery disease who underwent paclitaxel eluting stent (Taxus, Boston Scientific) insertion and 9 month followup coronary angiography. We screened the ABCB1 gene polymorphism in these patients. Genotyping was performed by Snapshot method.

Results: By genetic analysis, there were no significant difference between patients genotype distribution in terms of the baseline clinical characteristics, coronary artery disease risk factors stent size and baseline coronary artery lesion characteristics. But we found that 2677T, 3435T polymorphisms have a statistical significant association with angiographic stent restenosis rate as *P* value 0.008, 0.003 respectively. In haplotype analysis, one haplotype had a statistically significance (*P* value 0.026), and was found more frequently in In stent restenosis (ISR) group. The presence of 2677G and 3435C allele, assuming a codominant effect of the G and C allele, was independently associated with decreased risk of in stent restenosis when controlled for age, stent length, average reference diameter, diabetes, lesion complexity and smoking [OR=0.103 (0.015~0.680), *P*-value=0.018].

Conclusion: The results from this study demonstrates, for the first time, the significant association of MDR1 gene polymorphism with stent restenosis of Paclitaxel eluting stent. The presence of 2677T and 3435T allele was risk factor in stent restenosis in Korean subjects.

Key Words: Multiple drug resistance gene, Gene polymorphism, Paclitaxel eluting stent, Coronary artery disease, In stent restenosis