Title: Study of Aspirin and Clopidogrel Resistance by Light Transmittance Platelet Aggregometry and Its Association with Adverse Outcomes in Indian Stable Coronary Artery Disease Patients – A Prospective Cohort Study

Category: Acute Coronary Syndromes

Abstract

Background: The study was designed to evaluate the prevalence pattern of aspirin and clopidogrel resistance and its association with various risk factors and adverse outcomes in Indian stable coronary artery disease patients.

Methods: Total 151 hemodynamically stable coronary artery disease (CAD) patients taking a fixed dose of either aspirin or clopidogrel or combination of both were recruited in this prospective cohort study. Platelet function testing was done using light transmittance aggregometer. All the patients were prospectively followed up to detect any major adverse cardiovascular events (death, non-fatal myocardial infarction, stroke, revascularization), worsening angina severity and bleeding from any site.

Results: Total 8.61 % patients were completely resistant to aspirin, and an additional 21.85 % patients were semi-responder (Image 1). For clopidogrel, 29.17% patients had complete resistance, and 7.64% patients were semi-responder. The prevalence of dual antiplatelet resistance was 9.03%.. Among various clinical parameters, diabetes showed significant correlation with aspirin resistance [Odd Ratio (OD) 2.18 {95% Confidence Interval (CI) 1.07-4.44}; P=0.03] in logistic regression analysis (Image 2). Moreover, high hemoglobin level (OR 0.82[95% CI 0.67-0.98]; P= 0.03), elevated erythrocyte sedimentation rate(ESR) (OR 1.04[95% CI 1.00-1.08]; P= 0.04) and negative family history of CAD (OR 0.20 [95% CI 0.06-0.67]; P= 0.01) significantly predicted clopidogrel resistance pattern in our study. Both aspirin and clopidogrel resistance did not result in any significant increase in adverse events during the average 13.37 months follow-up period.

Conclusions: Both aspirin and clopidogrel resistance is highly prevalent in Indian coronary artery disease patients. Among various risk markers, history of diabetes significantly increased the risk of aspirin resistance. In case of clopidogrel, family history of CAD, hemoglobin level, and ESR level showed a significant correlation with clopidogrel resistance pattern. In contrary to the previous studies, aspirin and clopidogrel resistance did not increase any adverse events in our study.
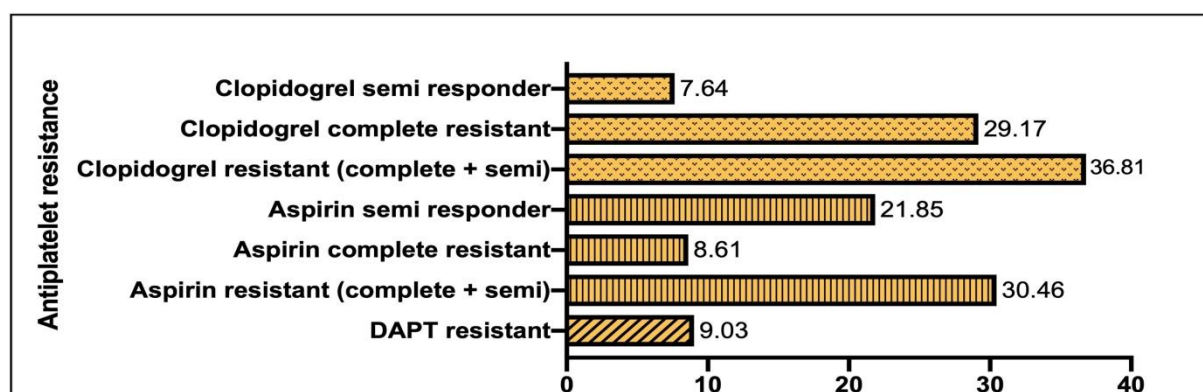
Image 1: Anti-platelet drug resistance prevalence in Indian coronary artery disease patients
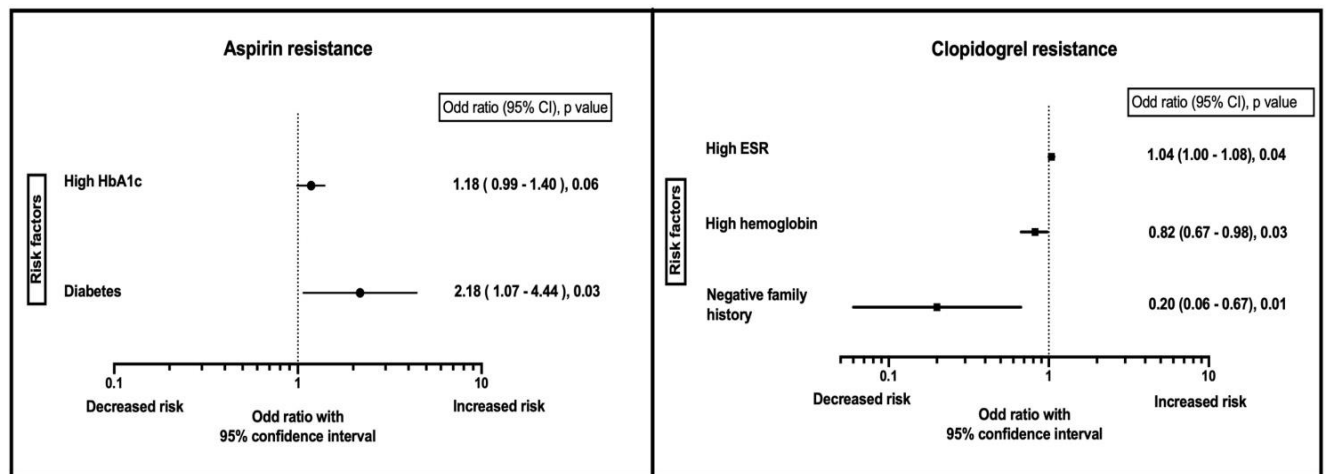
Image 2: Forest plot showing association of significant risk factors with aspirin and clopidogrel resistance (Logistic regression analysis)