OBJECTIVES: The current era of interventions, monitoring the effectiveness of antiplatelet medications is vital. Considering the emergence of the antiplatelet resistance, reduced response to antiplatelet therapy may lead to the stent thrombosis which is associated with high morbidity and mortality. In the present study we evaluated the effectiveness of ticagrelor-based antiplatelet regimen in post-PCI patients using AggreGuide A-100 platelet aggregator (Aggredyne Inc., USA), a new, FDA-approved, easy-to-use, point-of-care device developed to monitor platelet aggregation in whole blood using laser-light scattering technique.

METHODS: In this prospective, single-center study, patients who received antiplatelet therapy after undergoing coronary stent implantation at an Indian tertiary care center during May-October, 2014 were enrolled. Platelet aggregation was evaluated from the blood sample of each study participant after 2-3 days of antiplatelet therapy using the AggreGuide A-100. Test results were obtained as platelet activity index (PAI), on a scale ranging from 0 to 10. Since the PAI value <2 is obtained as no detectable aggregation during the test, such observations were assigned the PAI value of 2. Test findings were interpreted as (a) therapy working if the PAI value is 2-5 and (b) therapy not working if the PAI value is above 5.

RESULTS: A total of 228 patients (mean age: 55.35 ± 9.51 years; 75.4% males) were enrolled in the study. Among the study group, 79 (35.9%), 100 (45.5%), and 41 (18.6%) patients received Clopidogrel-, Prasugrel- and Ticagrelor-based antiplatelet therapy respectively, at the discretion of the treating physician. The AggreGuide A-100 testing indicated that the effectiveness of antiplatelet therapy was inadequate in 43 (19.5%) patients. In particular, 30 (38.0%) patients receiving Clopidogrel-, 11 (11.0%) patients receiving Prasugrel-, and 2 (4.9%) patients receiving Ticagrelor-based antiplatelet therapy displayed inadequate platelet response. Antiplatelet therapy was optimized accordingly for these patients.

CONCLUSIONS: Monitoring individual’s platelet activity should become a new standard-of-care for patients on antiplatelet therapy. Using AggreGuide A-100, nearly 20% of patients were identified to have inadequate response to thienopyridine-based antiplatelet therapy in our study. Antiplatelet therapy was optimized accordingly for these patients with inadequate response.