Bleeding and stent thrombosis on P2Y12-inhibitors: collaborative analysis on the role of platelet reactivity for risk stratification after percutaneous coronary intervention.

Although platelet reactivity during P2Y12-inhibitors is associated with stent thrombosis (ST) and bleeding, standardized and clinically validated thresholds for accurate risk stratification after percutaneous coronary intervention (PCI) are lacking. We sought to determine the prognostic value of low platelet reactivity (LPR), optimal platelet reactivity (OPR), or high platelet reactivity (HPR) by applying uniform cut-off values for standardized devices. Authors of studies published before January 2015, reporting associations between platelet reactivity, ST, and major bleeding were contacted for a collaborative analysis using consensus-defined, uniform cut-offs for standardized platelet function assays. Based on best available evidence for each device (exploratory studies), LPR-OPR-HPR categories were defined as 208 PRU for VerifyNow, 46 U for the Multiplate analyser and 50% for VASP assay. Seventeen studies including 20,839 patients were used for the analysis; 97% were treated.
with clopidogrel and 3% with prasugrel. Patients with HPR had significantly higher risk for ST [risk ratio (RR) and 95% CI: 2.73 (2.03-3.69), P< 0.00001], yet a slight reduction in bleeding [RR: 0.84 (0.71-0.99), P = 0.04] compared with those with OPR. In contrast, patients with LPR had a higher risk for bleeding [RR: 1.74 (1.47-2.06), P< 0.00001], without any further benefit in ST [RR: 1.06 (0.68-1.65), P = 0.78] in contrast to OPR. Mortality was significantly higher in patients with HPR compared with other categories (P< 0.05). Validation cohorts (n = 14) confirmed all results of exploratory studies (n = 3). Platelet reactivity assessment during thienopyridine-type P2Y12-inhibitors identifies PCI-treated patients at higher risk for mortality and ST (HPR) or at an elevated risk for bleeding (LPR).